plane
GRUMMAN
news

Lew Evans succeeds Clint Towl as Aerospace Board Chairman; elect Bill Zarkowsky President

A new alignment of the management of Grumman Aerospace Corporation, subsidiary of Grumman Corporation, took place February 17 at a regular meeting of the Board of Directors of Grumman Aerospace. Lew Evans, formerly President of Grumman Aerospace, succeeds Clint Towl, who resigned, as Chairman of the Board and Chief Executive Officer of Grumman Aerospace.

Bill Zarkowsky, former Senior Vice President, became President of Grumman Aerospace, succeeding Evans in that capacity.

Continuing as officers of Grumman Corporation, the parent company, are Clint Towl, Chairman of the Board and Chief Executive Officer; Lew Evans, President; Bill Schwendler, Chairman of the Executive Committee.

Clint Towl and Bill Schwendler will also serve as Directors and Senior Executives of Grumman Aerospace Corporation. They, with Chairman Lew Evans and Zarkowsky, will comprise the Grumman Aerospace Executive Committee.

Other news from the Grumman Aerospace meeting: Corky Meyer, formerly a Vice President of Grumman Aerospace, was elected a Senior Vice President, and Ross Mickey, deputy director of Aircraft Programs, was named a Vice President —both of Grumman Aerospace Corporation.

Parent company

The formation of Grumman Corporation as a parent or holding company and of Grumman Aerospace Corporation as a wholly owned subsidiary was approved by Grumman Aircraft Engineering stockholders two years ago. Other subsidiaries recently formed were Grumman Ecosystems and Grumman Data Systems.

Towl and Schwendler were two of the founders, 41 years ago, of Grumman Aircraft Engineering Corporation. Towl became President of Grumman Aircraft in 1960 and in 1966 succeeded Leroy Grumman as Chairman of the Board and Chief Executive Officer. He has received many awards and citations for his leadership in the United Fund of Long Island, in Scouting, and in industrial management.

Bill Schwendler was Chief Engineer during the first two decades of the Company's history, 1930-50, and then he was successively Vice President, Executive Vice President, and Senior Vice President. He became Chairman of the Executive Committee in 1960. He has received numerous awards and citations.

Lew Evans, whose background is law, joined Grumman Aircraft in 1951, and served as associate general counsel until 1958, when he was appointed general counsel. Two years later he became Vice President, and in 1963, Senior Vice President. He was elected President of Grumman in May of 1966.

Bill Zarkowsky doesn't mind admitting that he started as a $14-a-week stock boy in the summer of 1937. He graduated from New York University in engineering in 1939. He worked in the shop and on the flight line and then in various areas of Engineering, most of the time in some phase of power plant installation and propulsion design, and he also participated in development of the Rigel Missile.

Zarkowsky became associate to the Chief Engineer in 1956, and in 1957 was chosen to be a Sloan Fellow at M.I.T. He returned to Grumman the following year with a Master's in Industrial Management and was appointed program manager of the E-2A. In 1962 he became director of Program Management for military aircraft and unmanned space programs.

In 1964 Zarkowsky was named a Vice President. He became E-2A director and then was put in charge—first, of all aircraft programs, and then of aircraft, marine, ocean systems, tracked

(Continued on page 3)

Lew Evans

Bill Zarkowsky

Writin' us up

Richard Thruelsen, long-time associate editor, and then senior editor, of the Saturday Evening Post, has been commissioned to prepare a book about the Grumman companies and about Leroy Grumman, former President and Chairman of the Board, now Honorary Chairman. He will be looking for Company historical material and will be working in the Long Island area for some months.

Thruelsen is author of **Men at Work** (Harper), **Transocean Air Lines** (Holt), and **Voyage of the Vagabond**, and he was co-editor of **Adventures of the Mind**, Vols. 1 and 2 (Knopf). He is the author of many magazine articles and features.

Your cooperation is requested. Oldtimers especially can be helpful to him in his quest for authentic material, historical and biographical. He may be reached via Steve Kerekes, assistant to the Vice President of Grumman Corporation, Plant 5, Ext. 9501 or 2167.

Pushing back technical frontiers in development of Space Shuttle

Moving along the leading edge of new frontiers is exciting. At least, that's pretty much the way Carl Micillo sees it.

Micillo is the manager of the Advanced Development section of the Materials and Processes Department, headed by Tom Main. The department's principal tasks are to improve "the state of the art" and help assure smooth production processing.

"The hot one recently is the Space Shuttle," Micillo says. "It's a new vehicle, one that'll take time to master and produce—like the Lunar Module in the Apollo program—but it's not being done from scratch: We've been preparing for this shuttle-type effort for a number of years."

Therein lies the nature of the job, moving forward, experimenting and testing. That's the constant challenge.

The results of meeting such challenges are evident in house; for example, the boron-epoxy stabilizer for the F-14. That's the reward side of the coin. And getting to that reward point typically takes a decade or so—10 years of patience and perseverance (interrupted now and then by colorful oaths of frustration).

"But knowing that you're always doing, or looking for, something new makes up for the times you want to cuss the setbacks," says Paul Kanzler, Main's deputy. "Problems are fun."

If that's the case, Main's people should be real rollickers; they've got a

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Vol. 30, No. 4, Bethpage, N. Y., February 26, 1971

Crossing new frontiers challenging mettle of materials engineers

(Continued from page 1)

council-tent full of problems—or maybe "challenges" is a better word. For openers, take two challenges on Shuttle work: cryogenic tankage and TPS (thermal protection systems). Group head Bob Micich points out that "Those inboard cryogenic tanks have to be able to withstand a wide temperature range, from **minus** 463 degrees to **plus** 300 degrees Fahrenheit. On top of that, they have to be as light as possible and have high strength and toughness. We're investigating some aluminum-based alloys, and some laminates (materials bonded together in thin layers).

"Equally critical is TPS. You have to protect the entire exterior of the Shuttle, and particularly in those areas that are hottest during re-entry. Literally, we've got to take the heat off the ship; and that amounts to devising a TPS for 3,000 F."

Two problems immediately pop up. First, there is no known, usable material that, by itself, can take more than a heat level of 2,000 F—although the Space Shuttle is to be as reusable as a fine aircraft. Because of that, we come to problem two, the use of ablative materials for the 2,000-to-3,000-degree F. re-entry ride—and (by definition) ablatives are not permanent: The space ship will have to be recoated each mission.

For those who delight in quandaries and their resolution, which Main's guys do, try it on for size (and temperature).

They're working on it. As Micich explains, they're trying for "equilibrium"—that is, materials that protect and reradiate. The roads are many: a new material, REI (reusable external insulation), that serves the same purpose as a metal shield; silica or ceramic fibers; metal-ceramic, and a lot more . . . boron-aluminum, boron-polyimides, and so on.

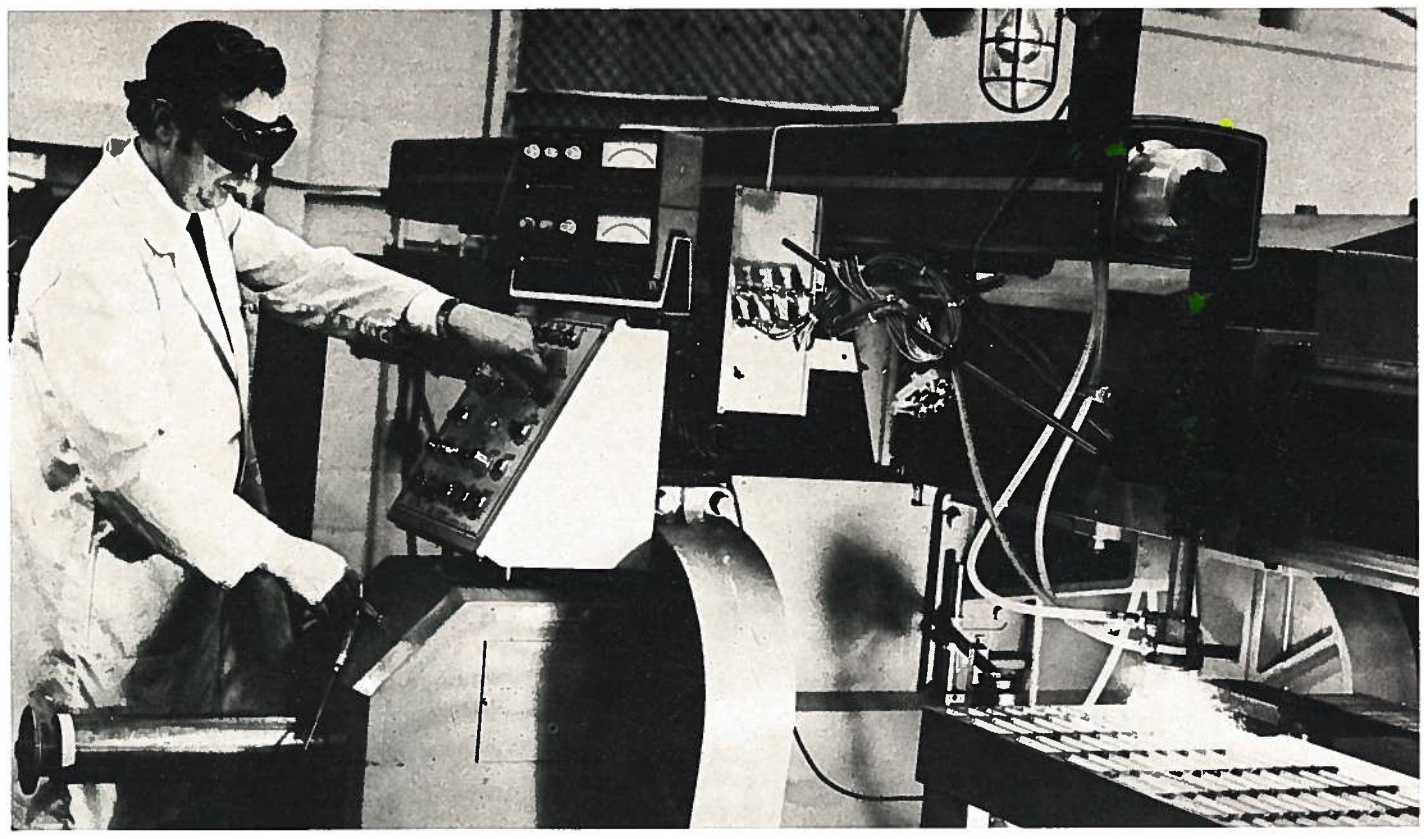
Experimental welder

In any case, Micillo's troops are tackling more than Shuttle events. One exploratory venture is aimed at getting close-tolerance forgings from so-called sintered preforms. (To sinter is to bring about a coherent non-porous mass by heating but without melting.) Successful use of such a material could lead to large-scale economies.

Over in the south end of Plant 2, in addition to the use of two monster-sized electron beam welding machines, there's work on an Air Force contract for evaluating a different way to do welding. There, Harold Ellison of M and P is measuring the merits of a Sciaky sliding-seal electron beam welding apparatus.

"It's a really versatile machine, and one that can duplicate the job of either of the two big ones," Ellison says. "It's a three-axis machine—horizontal, vertical, and circular—that can handle aluminum and titanium welding jobs. It gives you a 'soft' vacuum rather than the 'hard' vacuum of the two monsters, and has two other advantages: ease of set-up (a time-saver) and a potential for handling larger and longer pieces. You should be able to weld sections that would stretch as far as 50 feet. That's a long welded section!"

It is, indeed. How well will it work out? Tests will tell.



On the beam. Bill Tuttle of the Materials and Processes organization has to use eye shield as he uses Plant 2 laser to cut a piece of titanium. This is part of an ongoing program to test the capabilities of the machine. (Photo by Nat Scherer)

At the other end of Plant 2, Bill Tuttle of M and P is testing the values of a laser beam apparatus with an eye on cutting titanium. Tuttle says that the machine, which was moved in in mid-December, can cut titanium at thicknesses ranging upward from 0.015 inch. "It'll cut steel, any ferrous material," says Tuttle. "We don't yet know its full capability, but we'll find out."

Of course, finding out—preferably well ahead of time—is the "why" of Main's operation. And in doing that, a host of searches is under way. In the field of aircraft advanced systems, says Micillo, "we're looking at structural materials for the 1980-1985 era, doing failure-mode analyses. Right now, three candidate materials are being examined: metals, metal matrix composites, and organic matrix composites. We've found, for example, that there may be a really strong future for boron, graphite, and glass filament for use in composites. We've looked at beryllium alloys and graphite composites, and though they offer a lot in terms of weight savings, it's likely that high material costs and fabrication difficulties will limit usage, at least for the present.

Weight savers

"If we think even further ahead, to the 1990s, it's more than possible that advanced composites could reduce the weight of wing, tail, and fuselage sections by about 40, 35, and 15 percent, respectively."

That developments such as these will come can be inferred from the history of technology, and from what's happening now. A good for instance now is an F-111 stabilizer shoulder panel, which, for the first time at Grumman, was built **entirely** of graphite-epoxy. The panel can be used for "non-primary" aircraft structures; from the standpoint of materials substitutions, it's a weight-saver—10 pounds versus 18, and shop estimates show it cuts down on manhours, 120 versus 200.

Comparable progress is leaping forward in processes, too: plasma-arc welding, ultrasonic drilling, radio-frequency curing of non-metallics, and so on. Most people look upon plasma-arc welding as a compromise between gas-tungsten-arc (GTA) welding and EB welding. Plasma-arc has advantages over GTA—more uniform penetration, faster welding speed, a slimmer heat-affected zone, less distortion, minimal damage to adjacent materials, etc. In "competition" with EB, plasma-arc welding can be done out-of-chamber, gives more uniform penetration, has comparable tensile and fatigue properties, is clean, and boasts a shorter set-up time. The prime disadvantage now is that it can't handle material thicker than a half inch. Work is going on now to develop an automatic plasma-arc welding system.

Ultrasonic drilling has cut drill time, and drill needs, in boron-epoxy composites. The next step was to see whether it could be applied to drilling of titanium: It is now being used in production on the F-14.

Radio-frequency curing of non-metallics is well under way, with promise of shortening the curing cycle, getting better tool utilization rates, and lowering fabrication costs. But there's a hurdle: To become a production process, it first has to prove itself on laminates.

So the action is spirited—and by no means confined to Micillo's group. Tom Main has three other groups actively exploring new frontiers: Metallurgy and Welding Engineering, Chemical Engineering and Process Standards, and Materials and Processes Laboratories and Operations.

"We're busy, which is good," remarks Main, "and it's a continuous process of reevaluation: So many new things are happening in so many different areas, we must be very careful to assign highest priority to those tasks having the biggest payoff. That's probably part of what Carl Micillo meant when he said the business is exciting."

Open tie-line to Stuart facility

On February 22, tie line service was initiated between Bethpage, Garden City, Syosset, and Wyandanch and the Grumman facility at Stuart, Florida. This new service is available for business traffic 24 hours a day in both directions, and **it eliminates the need to place long-distance toll calls between these locations.**

Restricted telephone numbers (those that can be used only for intra- and interplant calls) can also make use of the tie lines. Outside lines that are in service for communications to Stuart should be converted to the lower cost restricted type.

Please add the following dial procedure to page ii of the Grumman Telephone Directory.

When calling from Bethpage to Stuart:

- Dial **512**
- Dial three-digit extension number

(For information at Stuart, dial 512-0)

When calling from Stuart to Bethpage:

- Dial 7
- Dial four- or five-digit extension number

(For information at Bethpage, dial 7-3369)

These facilities are limited. Please make your message brief.

Meyer named Senior V. P., elect Mickey Vice President

(Continued from page 1)

vehicle, and ecosystems programs. He is now President of the Grumman Ecosystems Corporation subsidiary. Early in 1970 he was elected a Senior Vice President of Grumman Aerospace. He has been a Director of Grumman Aerospace Corporation since May of 1969, and Chairman of the Grumman Aerospace Executive Operations Board since 1970.

Newly elected Senior Vice President Corky Meyer has had a long history with Grumman, too, starting in early World War II as an engineering test pilot. He was project test pilot on Hellcat, Tigercat, Bearcat, Panther, Jaguar, Tiger, and Super Tiger. He test flew Grumman's first jet aircraft, the XF9F-2, and in 1954 he was the first civilian to qualify for jet squadron operation aboard an aircraft carrier.

In 1960, Meyer moved into Business Development. After serving as director of Aircraft Development and of Program Development, he returned to flight test activities as director of Government Flight Acceptance. For seven of those years he was also President of Grumman International.

He was elected a Grumman Vice President in 1967 and in 1968 was named director of Product Manufacturing. In the fall of 1970 his duties were broadened. He became "responsible for all Product Operations, including Manufacturing, Quality Control, and Aircraft and Spacecraft Acceptance Testing, and for the general management of the Calverton, Savannah, Ga., and Stuart, Fla., facilities." He is on the Board of Directors of Grumman Aerospace.

Corky Meyer

Ross Mickey

Former A-6 director

Ross Mickey, named Vice President of Grumman Aerospace, has been Zarkowsky's deputy for the past two years, concentrating on Aircraft Programs. Previously he had been director of all the A-6 programs.

Mickey is a retired Marine colonel and pilot, long acquainted with Grumman planes. He helped lay out some of the original Navy-Marine operational requirements for the Intruder and he had extensive experience in night and all-weather aircraft operations. From 1945 to 1949 he was project officer in the Bureau of Aeronautics. Since coming to Grumman in 1966 he has worked on the F-111 program, was for a year A-6 program manager, and then, for 18 months, A-6 program director. He became deputy to Zarkowsky in February of 1969.

Short shots

Future Naval aviators at Minnesota University are getting a look at the Navy's new F-14 fighter—even though it's in mini-scale. Reuben Snodgrass, F-14 technical flight test manager, discovered through his son, Dale, a midshipman in the NROTC program, that there were no Grumman aircraft represented in the Minnesota reserve officers unit. There are now. Snodgrass, representing the Company, sent an F-14 model and a framed photo of the EA-6B to the unit commander, Capt. W. T. Broughton.

Tom and Janet Cornelio proud parents these days. Son Carl, a sailor attached to the crash crew at Lakehurst air station, recently saved a mother and her daughter from icy waters in Forked River, N. J., after their car skidded on an icy road, overturned, and hurtled into a lagoon. Neither could swim, and only young Cornelio's swift action saved them from death. . . . Ed Thomas of Vehicle Electronic Design Engineering, Plant 35, cited by the Society of Automotive Engineering for contributions to the field of relay-application practices.

Chalk up another one for the "Swordsmen." Recently, Lt. Deck Waters and Lt. Mike Kneeland, an A-6A air crew of Attack Squadron 145, completed the 147,000th landing aboard the U.S.S. Ranger while the carrier was operating in the Tonkin Gulf. . . . John Goodrum, director of Program Support for NASA at Marshall Space Flight Center at Huntsville, honored recently by L.I. Chapter of Society of Logistics Engineers. Dick Spinner of Product Support, vice chairman of the local group, presented the award in appreciation of Goodrum's outstanding contributions to the field of logistics.

Two KSC men, George Geisler of Pan Am and Henry Steier of Grumman, spent part of their holiday season on a 60-mile canoe trip with 20 Boy Scouts. During the five-day jaunt, Geisler, Steier and the Scouts paddled their 11 canoes loaded with tents, food, and knapsacks over a number of inland waterways. . . . The 274th Mobile Communications Squadron located at Roslyn Air National Guard Station is looking for people with prior service in the ground communications field: HF/FM, teletype maintenance, and teletype operations in particular. For further information, contact Maj. Charles (Corky) Gilchrist, 516 MA 1-8047.

Heading toward showdown on HEAO proposal

The thrust continues on the Phase B study contract that Grumman is pursuing under a $250,000 contract to NASA for a High Energy Astronomy Observatory. Teamed with Bendix Corporation and Hughes Aircraft, Grumman Aerospace is in competition with TRW Systems to win the C/D design and hardware contract, and this could be worth about $75 million.

"Right now we're working toward a meeting with NASA people March 10-12," HEAO Program Manager Frank Canning reported last week. "Those March meetings will be a preview of our final report to Marshall Space Flight Center April 14.

"We will then have until April 22 to submit all our documents. TRW Systems is our competition on the Phase B study and they have a good record, so we're working hard to win that Phase C/D contract," Canning said. Marshall Space Flight Center will probably issue a Request for Proposal early in July, with eight weeks allowed for response. The winner of the C/D contract will be able to go ahead on the C/D phase for two spacecraft by January of 1972.

Distinguished teammates

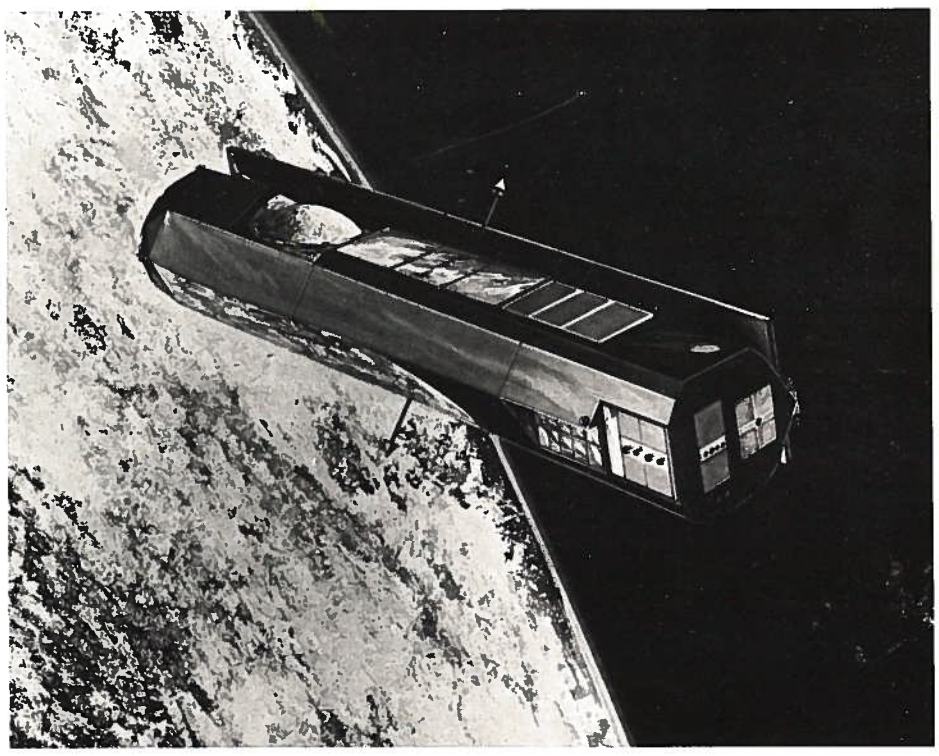
Also deeply involved in the HEAO are engineers from Research who are associated with experiments to be launched on HEAO-B. Teamed with two prominent physicists, Dr. Robert Hofstadter, Nobel laureate of Stanford University, and Dr. Carl Fichtel of Goddard Space Flight Center on a gamma ray experiment are Tony Favale, Fred Kuehne, Eric Pickup, and Ed Schneid of Research and Robert Madey of Advanced Space Systems.

On another experiment for the same HEAO-B spacecraft, the same five men, together with Frank Swanson and John Dooher, are associated with Dr. Luis Alvarez, Nobel laureate of the University of California at Berkeley. This experiment will be to fly a superconducting magnet aboard the spacecraft to measure electron and positron components of cosmic rays. The spacecraft will need to carry liquid helium to cool the magnet to -425° F. "You get no resistance this way, and require little power for the experiment," Schneid said.

HEAO is an unmanned observatory, taller by a third than a Lunar Module. It is 30 x 10 feet and will weigh 20,000 pounds. In contrast, the Grumman/NASA Orbiting Astronomical Observatory, circling the earth and, after more than two years, still sending back information on stars and galaxies, weighs 5,000 pounds, including 1,000 pounds of payload.

"HEAO will make observations in the spectrum previously recorded only in brief rocket and balloon flights," says Canning. "We are going to have a combination astronomy observatory and physics laboratory for scientific investigations that could have many future practical applications."

The HEAO headquarters formerly in Plant 41 is now in Plant 25.



HEAO. **Grumman is working hard on Phase B study of High Energy Astronomy Observatory and on two experiments that willl be carried into space. (Painting by Jim Rodriguez)**

B. Stotz
Fuse. Sub.

A. T. Natale
Fuse. Fwd.

F. A. Coveney
Parts Paint

B. Muczenski
Ordnance

C. V. Saurman
Ordnance

H. A. Rooney
Plant Stores

S. J. Pancir
Tool Fab.

F. V. Kaprinski
Honey. Details

G. J. Hehir
Fin. Assem.

February service list bulging with veterans; 17 mark 25 years

This month's anniversary roster proves that a lot of Grumman people have staying power. There are 65 on this month's 15-year anniversary list and 73 celebrating 20 years of service. Not so many as usual occupy the other lists: 17 with 25 years and 16 with 30. But all add up to a great many years devoted to Grumman's growth and success.

Silver Anniversary men may recall that Grumman aluminum canoes were "big" in 1946. Grumman had branched out into other products than aircraft after the end of World War II, and eight canoes were displayed at the opening of the New England Sportsmen's and Boat Show in Boston that winter. Fifty-three orders came rolling in the first day of that show. During the following few weeks letters of inquiry from all over the world were averaging 185 a day.

Today the canoes are manufactured by Grumman Allied Industries in Marathon, N. Y., and Carmichaels, Pa., at a rate of close to 20,000 a year.

There are 16 men celebrating 30 years with Grumman:

PLANT 1: Richard Housel, Prototype.

PLANT 2: Hilbert G. Hagland, Press; Ralph M. Koos, Steel Parts Assembly; Gregory Kierdorf, Plant Management & Staff; Jerome Barfus, Special Project P/M; George Sechko, Plant Stores & Distribution.

PLANT 3: Peter G. Bernard, Fuselage Assembly; Sidney G. Higbie, foreman, Honeycomb Pre-Fit.

PLANT 6: Charles D. Brewer, Instrument Test; Robert F. Flathman, Avionics Management & Staff; Milton A. Radimer, Production Control - Parts Control Admin.

PLANT 15: Arthur J. Stone, Product Support Verification & Product Support.

PLANT 17: Charles J. Vaclavik, Receiving Inspection-General.

PLANT 20: Howard B. Kearsing, Transportation-Operations.

PLANT 25: Joseph N. Wittko, Program Management Space.

PLANT 34: Edward Dalva, Product Support Management.

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The 17 men celebrating their silver anniversaries with Grumman are:

PLANT 1: Benjamin Stotz, Fuselage Sub-Assembly; Anthony T. Natale, Fuselage Forward.

PLANT 2: Frank A. Coveney, Parts Paint; Boleslaw Muczenski, and Charles V. Saurman, Ordnance; Howard A. Rooney, foreman, Plant Stores & Distribution; Stanley J. Pancir, Tool Fab Sub-Assembly - Tools.

PLANT 3: Frank V. Kaprinski, Honeycomb Core Details.

L. G. Kosby
Cold Flow

J. G. Gavin
Sr. V.P. - Space

J. Di Stefano
Ctr. Sec. Sub.

A. C. Hills
Ctr. Sec. Sub.

J. King
Fuse. Join.

J. Markowski
Food Serv.

H. G. Birnn
Engg.

A. Narvaez
LM Ops.

PLANT 5: Gerald J. Hehir, Final Assembly; Lawrence G. Kosby Jr., Cold Flow.

PLANT 25: Joseph G. Gavin Jr., Senior Vice President and director, Space Programs.

PLANT 27: Joseph Di Stefano and Arthur C. Hills, Center Section Sub-Assembly; John King, Fuselage Joining.

PLANT 36: John A. Markowski Jr., Cafeteria manager.

PLANT 77: Herbert G. Birnn, Production Engineering, Stuart.

PLANT 83: Albert Narvaez, KSC LM Operations Management.

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Two women and 71 men round the 20-year bend at Grumman:

PLANT 2: Walter F. Kowalski, E-B Cleaning & Finishing; Pasquale De Lilla, Production Control - Parts Control; Edward A. Cramer, Production Control Mgt.; Benjamin Preisler, Financial Status & Control; William F. Wolffer, Tool Fabrication Grind & Mills; Nicholas Dell Orto, Charles B. Kipp, and Wiley E. Gordon, Facilities Maintenance; Victoria G. Flaack, Telephone Service.

PLANT 3: Edward Kusko, Alodine; Richard C. LaFantano, Parts Paint; Ellsworth H. Hill, Final Assembly; Louis Bubeck, Fuselage Assembly; Eugene T. McGreevy, and Alfred Andrews, Inspection - Mechanical.

PLANT 4: Edward Miller, Production Control - Records & Release.

PLANT 5: Thomas J. Kelly, Final Assembly; Genevieve Dellysse, Engineering Salary & Exp. Administration; Robert B. Englert, Advanced Aircraft Systems.

PLANT 6: Harold E. Clareen, Final Assembly; Robert E. Rehm, Support Equipment Production; Arthur R. Junk, Instrumentation Planning; Maxwell C. Papanek, Facilities Administration.

PLANT 7: Wilbur T. Weller, GDS - ATS.

PLANT 8: Rocco J. Cessario, Flight Avionics.

PLANT 11: George Laduzinski, TM Engineering - Method Specification Det. W/M.

PLANT 12: Ambrose L. Butler, and Fred P. Facardi, Facilities Maint,; Anthony C. Klein, Meas. Standards Lab.

PLANT 14: Paul E. Toussaint, Lab Test & Development.

PLANT 17: Charles Gemuendt Jr., Central Property Disposal.

PLANT 20: Philip Seligman, Transportation - Operations.

PLANT 23: Gordon J. Rogers, Static Test.

PLANT 24: John J. Costanzo, Receiving Inspection - General; Thomas F. Mulligan, Receiving Inspection - Elect. Test Lab.

PLANT 25: Robert R. Meardon, Property Management; Theodore C. Thompson, Structural Designers; Richard W. Barthelme, Alighting Gear; Gerard V. White, Project Engineering - Development Space.

PLANT 27: Clifford H. Boyd, Fiberglass; Theodore Barbuto, Fuselage Sub-Assembly; Walter D. Moule, Fuselage Sub-Assembly; Charles A. Duff, Center Section Sub-Assembly; Kurt Schroer, Facilities Maintenance.

PLANT 28: Jack Krupnick, Personnel Administration.

PLANT 30: Michael A. Strazay Sr., Product Support Site Supply.

PLANT 33: Gerald W. Cockerill, Sub-Assembly; Lawrence A. Jesberger, Avionics Assembly; Harry A. Bush, Wire; Francis Budzinski, Flight Avionics.

PLANT 35: John M. Rigsby, Project Engineering - Development Space; John P. Christensen, Quality Control Administration & Program.

PLANT 36: Frank Apa Jr., Final Assembly; Edwin C. Reeck, Structural Designers; Fernando E. Martins, Seats & Survival.

PLANT 77: John R. Seadon, Manufacturing Operations & Staff; Bernard P. Bendorovich and Anthony M. Cacioppo, Inspection/Quality Control.

PLANT 83: Alfred A. Bould, KSC Manufacturing Offices.

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Sixty-five will complete 15 years with Grumman in February:

PLANT 1: Patrick T. Jennings, Prototype; William J. McAlpine, Fuselage Sub-Assembly; Edward W. Beckett, Instrument Test; Frank Genova, Plant Stores & Distribution; Richard Halley, Manufacturing Planning & Control Management; Charles G. Brun, Facilities Maintenance; Walter Kohlhoff, Air Breathing Propulsion; Eugene L. Mouguin Jr., Machining Engineering.

PLANT 2: Jacob S. Domalewski, Parts Paint; James E. Whelan, Prototype; Joseph Avolese, Sub-Assembly; William Carroll, Plant Stores & Distribution; Francis X. Drumm and Alan C. Lofsten, Material & Process Management & Staff.

PLANT 3: Ellison L. Brem, Router & Shear; Paul T. Bartolo, Machine Shop; John P. Stewart, Parts Paint; John Sidorski, Honeycomb Pre-Fit; Robert E. Westrick, Shop Control.

PLANT 4: John J. Bardenhagen, Final Assembly; William P. Paulik Jr., Carroll Rosen and Arthur J. Young, Production Control - Records & Release; John L. DeSandre, Equipment Lines.

PLANT 5: Bruce R. Stiefel, Final Assembly; James Bacon, Facilities Maintenance; Nicholas F. Dannenhoffer and Richard G. Cleary, Advanced Aircraft Systems; William R. Sperling, Employee Services; Chester M. Parker, Re-

(Continued on page 5)

VS-35 record tough to match

What a record!

Think of yourself: Could you go for a whole decade without an accident?

If you could, then join flight-hands with the VS-35 squadron which has done its "hunter-killer" anti-submarine warfare job for 10 years flying Grumman's redoubtable S-2 Tracker. Called the "Boomerangers," the squadron has logged in more than 65,000 flight hours and some 15,416 carrier landings.

With that type of record, you'd think somebody would stop by to squeeze a few hands and offer congratulations. As it turned out, there were quite a few "somebodys" on hand, including Vice Adm. W. F. Bringle, Commander of all Naval Air Forces in the Pacific. And there was a message from Adm. B. A. Clarey, CINCPACFLT:

"Your superb record of accident-free flying . . . is noted with pleasure. Completion (of this record) without blemish is indeed a notable achievement and tribute to the squadron's sustained professionalism. . . ."

As guest speaker at the 10-year anniversary celebration, Admiral Bringle commended the men of the squadron: "It is remarkable to work in a carrier environment for 10 years without an accident. Such an accomplishment is indicative of highly professional performance by all personnel who have served in the squadron."

Cdr. Charles Nelson
Squadron sets record

For Cdr. Charles W. Nelson, commanding officer of VS-35, it was a moment of pride in his crew.

There was more than a little pride in the performance for Grumman, too. The rugged Tracker series—S-2A through the current S-2E—has proved to be a highly dependable aircraft. The S-2E was the first carrier-based aircraft capable of detecting, identifying, and destroying enemy subs. Its advanced electronics systems have made it popular not only for the U.S. Fleet but also for such free-world nations as Argentina, Brazil, Canada, Italy, Japan, and The Netherlands.

Clean sweep!

For the first time in the history of the 26-year-old Reinforced Plastics/Composites Division of The Society of the Plastics Industry, Inc., one company pulled down all five top awards. That company was Grumman.

Most imposing of the wins was the grand prize, a beautifully fluted (and very expensive) glass stem awarded by Owens-Corning Fiberglas Corporation. The hand-crafted Steuben glass crystal sculpture, titled "Counterpoise," went to Grumman for the design, engineering, fabrication, and testing of the spinnaker pole of the America's Cup winner, Intrepid.

The spinnaker had also placed first in its category (Marine).

The Company grabbed another double winner for, first, best technical paper and, second, the McGraw-Hill Best of Conference Award. The $200 award is shared by the authors, George Lubin and Sam Dastin, both of Materials and Processes Department.

The fifth award—first prize in the Aircraft and Aerospace category—went to Grumman for the boron composite structure of the F-14 horizontal tail stabilizer.

That visit to the Washington conference of The Society of the Plastics Industry really paid off!

Big winner. **Clint Towl (R), Chairman of the Board and Chief Executive Officer of Grumman Corporation, talks with Ken Marshall (L), project manager, and Bob Hall, retired Vice President, who were in charge of making the spinnaker pole for the America's Cup winner, Intrepid. (Photo by Fred Annette)**

Bulging with veterans . . .

(Continued from page 4)

source Management & Staff; John B. Conover, Corporate Suggestions.

PLANT 6: Charles H. Hoffmeister, Wing Final Assembly; William G. Roche and Joseph Molinaro, Electronics Repair; William P. English, Repair Control; Frank E. Carlin, Inspection - Electronics; Francis A. Mooney, Quality Control Tech Services.

PLANT 7: David P. Detlefsen, Hydraulics; Edward Harrison, Elect. Flt. Development Operations; Karl H. Thoma, Presentations Services; William T. Flatley, Elec. Engineering Laboratories; Walter J. Steiges, Air Traffic & Radio Communication.

PLANT 12: Harold F. Sanders Jr., Chemical Engineering.

PLANT 15: Robert W. Miller, Instrumentation Engineering.

PLANT 17: Robert T. Byrnes, Records & Stores - Management & Staff.

PLANT 20: Arthur O. Baldwin, Transportation - Equipment Maintenance.

PLANT 24: Roald L. Larsen, Central Receiving.

PLANT 25: Nils R. Tegner, Structural Designers.

PLANT 27: Frank G. Mazzella, Fiberglass; Pedrito Walters, Center Section Sub-Assembly; William H. Kammann, Fuselage Joining; John A. Barclay, Inspection - Mechanical.

PLANT 30: William R. Sheerin, Subcontract Negotiations; Eugene A. O'Brien, Property Management.

PLANT 33: Salvatore J. Marchese, Sub-Assembly; William J. Monahan and Robert Albert, Production Control - Configuration Control.

PLANT 34: Frederick H. Softye, P/S Servo Engineering & Training Development; Aloysius Cobis, Contracts A/C.

PLANT 35: Jean G. Pailet, Engineering Administration; Reed S. Bradley, Vehicle Drafting.

PLANT 39: Angelo Martello, Support Drafting.

PLANT 55: Oswald Johanesen and Thomas E. Wheeler, Service & Support; Clarence W. L'Hommedieu, Financial.

Thanks, y'all

Thanks to a number of people at Bethpage, Plane News was able to spread the news of the new Corporate lineup to all Company bases in this country the morning after it happened. Starting about 8 p.m. on February 17, Reproduction Services in Plant 1, through its "Nightcap Service," printed and bundled about 30,000 of the one-page flyers overnight.

Early the next morning, Transportation took over and distributed the Plane News special report to all Long Island plants where they were disseminated through Employee Services Offices and Engineering Counters.

And thanks to the TWX Room in Plant 5, all Grumman bases off Long Island were informed of the corporate changes early on the morning of February 18.

Again, we say thanks.

Never too late to change image

If you're losing your own "battle of the bulge" with little hope of ever reversing the process, take heart, friend. About 16 weeks ago, a number of Grummanites with similar misgivings decided to do something about it. They set up their own Weight Watchers club at Grumman, and went about encouraging others to join with them. If "the world loves a fat man," you couldn't prove it by them.

And how have they fared? It wasn't easy. Some fell hors de combat to hors d'oeuvres, but those who stuck with it are really shaping up. Recently, five Weight Watchers who lost 20 pounds or more since starting classes were "graduated." Many more are still in the business of shedding excess weight, with one showoff now 55 pounds lighter. To date, the entire club has lost over 1,000 pounds.

If you are overweight and would like to do something about it, call Lee Badalamenti, Ext. 2171. She knows how you feel. She's been there — and has come back. It's costing her a little money for a new wardrobe, but she feels it's money well spent.

Earnings report

Earlier this month, Grumman Corporation released its sales and earnings figures for the 12 months ending December 31, 1970. Consolidated sales and other income were $995,410,054 and consolidated net income $20,271,704—equal to $2.90 per share after provision of $17,500,000 for Federal income taxes.

For the 12 months ending December 31, 1969, the corresponding figures were: sales and other income, $1,182,622,576, and net income, $22,087,714—equal to $3.06 per share after provision of $22,500,000 for Federal income taxes.

THEY'RE TAMING TITANIUM

Quality control. **Jim Kee (L) and John Haines of Quality Control Lab, E-B Welding, are setting up a weld certification specimen for X-ray inspection. F-14 weld inspection is demanding of the highest quality. (Photo by Bob Settles)**

"Once you understand it. . . . "

That thought must have occurred to Stone Age man and all his descendants as they formed their tools, first from stone and then later from a succession of metals, each an improvement on the one before.

And now it's the Space Age, with titanium emerging as the wonder builder. Sometimes called "the cantankerous metal" because of the problems it poses in machining and handling, titanium nevertheless is proving to be a spectacular weight-saver on the supersonic F-14. And "once you understand it," you can cope.

The very backbone of the F-14 is the 1800-pound titanium wing center section box, a welded assembly that ties the nacelles and wings to the fuselage and is a fuel tank and a support for the pylons that hold the droppable tanks. "The loads on it are about a million pounds in a pullout," says John Dickinson, production manager for Electron Beam Welding and Hot Form Center.

Behind the success of welded and hot formed titanium in the F-14 were people —people looking into the unknown, managers making decisions, engineers working at top speed, men doing new and different tasks with no room for error. "A dedicated group of people pushing the state-of-the-art in welding, in forming, and in non-destructive inspection techniques," to quote Jerry Barfus, Corporate manager of the E-B facility.

$10 million facility

To tour Grumman's $10 million Electron Beam Welding and Hot Form Center in Plant 2 is to wonder at the long-range planning that led up to it. Never in the Company's history has a new material created such disciplined commotion. Grumman had used titanium in limited amounts in the E-2 series, and more of it in the A-6A, F-111, the Gulfstreams, LM, and EA-6B. Then came studies of one-step hot forming to improve on preforming and hot sizing. These studies left no doubt that titanium, with its 30% weight advantage (as compared with stainless steel), was mandated for the F-14 supersonic fighter just over the horizon.

The revolution in materials and methods required some very big and expensive decisions. A "producibility" team made up of engineers, manufacturing, and QC people ticked off the advantages of titanium— if it could be welded satisfactorily: "strong, light, stiff, non-magnetic, non-corrosive, weldable in a vacuum. We must have electron beam welding and go all the way if we're to compete on the F-14," was the decision.

'Homework' paid off

"We put more than $1 million into feasibility and capability studies," John Dickinson says. "One reason we got the contract is that we'd done our homework. It's fortunate we had guys in management with the foresight to appreciate titanium and electron-beam welding and the guts to make the decisions in time."

In February 1968, almost a year before the award of the F-14 contract, Grumman committed itself to purchasing, from Sciaky Brothers of Chicago, the two largest E-B chambers in the world. "They're BIG," says Jerry Barfus. "The rectangular chamber has a capacity of 25x9x11 feet; the top-loading clamshell welder has a 32x10x8-foot chamber, big enough to contain three bumper-to-bumper Volkswagens. The function of these vacuum chambers is to produce high quality, reliable weldments automatically in a completely uncontaminated vacuum environment. Here a beam of high velocity electrons, striking the workpiece at half the speed of light, produces localized melting and joining. Welding speeds of up to 100 inches a minute are possible. It's a fully mechanized and highly reliable process, and a penetration of two inches on a single pass is better than we can get with any other method."

"E-B welding, by the way, can join together materials that may be the next generation metals: tantalum and tungsten alloys, for example," said Dietrich Helms, group leader, E-B welding. "Grumman tests of Ti 6Al-4v (six parts aluminum, four vanadium) alloy have demonstrated 100 percent of base metal tensile strength and near 100 percent of base metal fatigue strength when electron-beam welded."

The other major decision that helped to speed F-14 production was to hot-form the wing skins. Grumman had been pioneering in hot forming for a decade or more, but here was the ultimate. "We put a titanium skin in a ceramic die, cover it with 10 inches or so of vermiculite (shredded mica), tape the edges, and place a nylon blanket over the entire die and apply approximately 1300 degrees of heat—then pull a vacuum," says Joe Newman, who heads the titanium processing for Manufacturing Engineering.

'No other like it'

"That's an oversimplification of the process," Newman continued, "but with all the proper controls for heating and cooling, we've been able, with the help of digital programming, to form a titanium wing skin that could never have been done with metal dies. There's no other like it in the world."

Grumman ordered from Glassrock Products Inc. of Atlanta, Ga., four of these 25-foot, 30-ton ceramic dies.

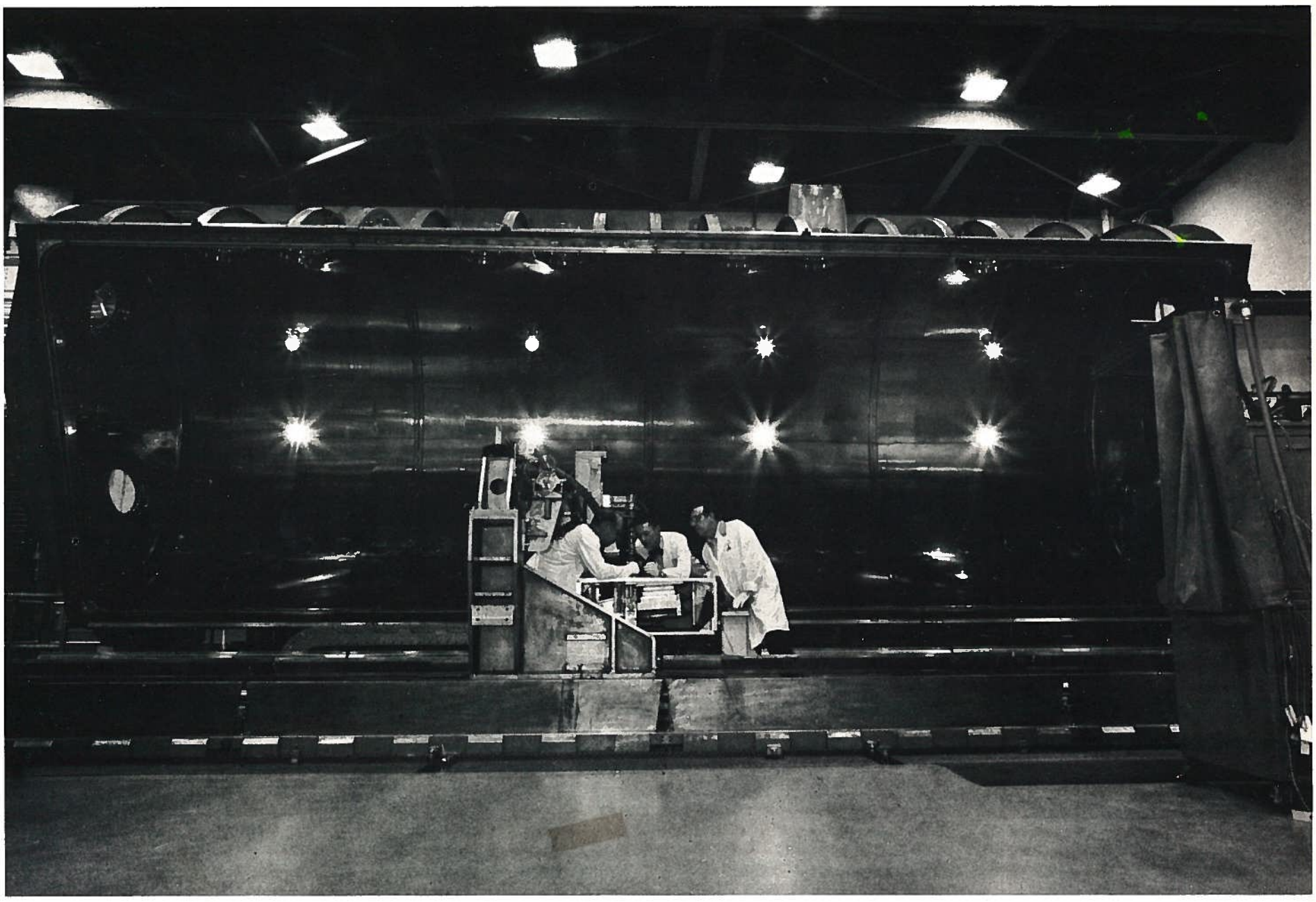
As the realities of these huge pieces of manufacturing equipment from Sciaky and Glassrock began to loom, Facilities Engineering joined the planning. "A decision was made in March 1969 to locate the multi-million Electron Beam Welding Facility in the southeast part of Plant 2, and the hot-forming operation in an adjoining area," says Bob Yezek, project manager from Facilities Engineering. "We immediately embarked on the task of planning and engineering the plant design."

By April, Facilities Engineering had drafted preliminary plans and had gone through cost estimates and budgets and had got Corporate approval. In early May the first large rectangular E-B welder, weighing 325,000 pounds, arrived at Plant 2. Installation of that began while the pouring of concrete for the bigger clamshell welder was occurring 40 feet away. By November, both E-B welders were operating and the E-B area was a showplace, with new lighting, new paint, new overhead crane and a ventilation system reworked to create a slight positive room pressure to minimize dust infiltration.

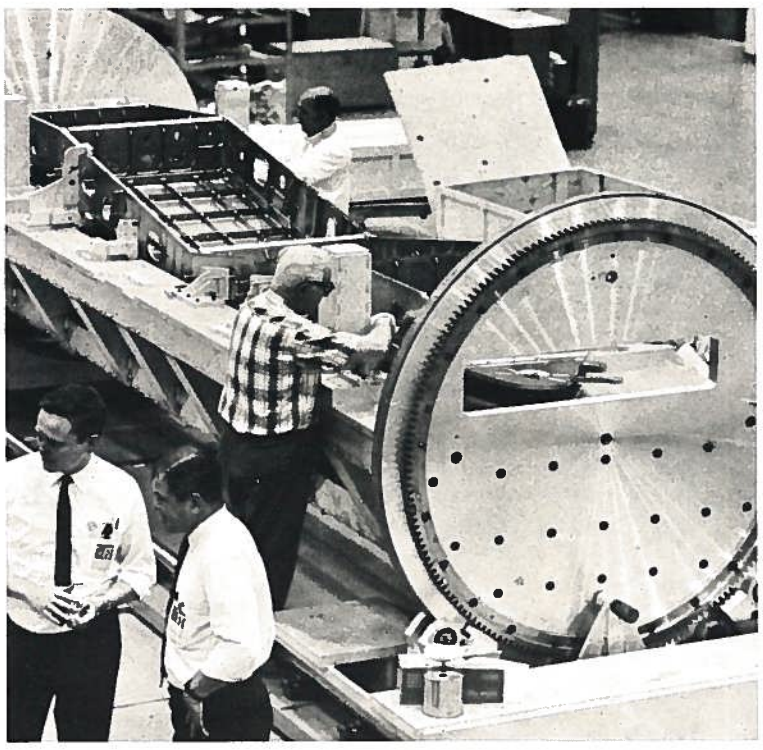
The Quality Control area had to have lead-lined X-ray rooms and overhead traveling X-ray unit. A stainless steel ultrasonic inspection tank, 36 feet long, was installed in a concrete pit. Overhead, the new crane system permits material to be transferred from sonic tank to X-ray room on the same hook.

The much-used Clean and Descale facilities were designed to insure efficient, safe, and comfortable working conditions.

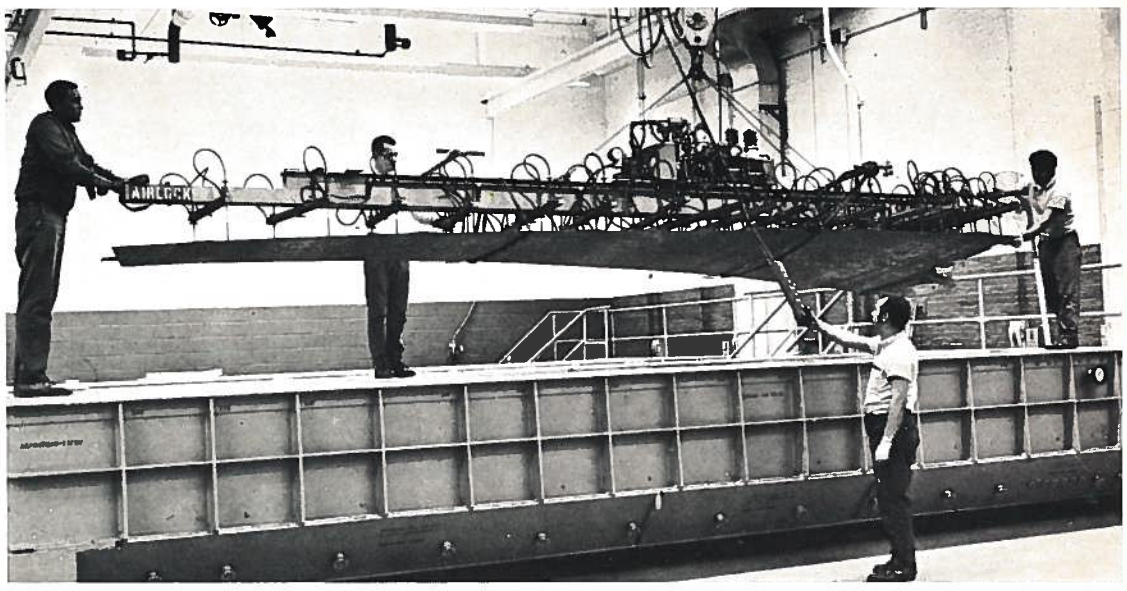
(Continued on page 9)



Clamshell. Welding speeds up to 100 inches per minute are possible in this electron beam welder. The clamshell, which can take assemblies as long as 26 feet, has a vacuum environment that eliminates the possibility of contamination during welding. Here the team of Cliff Polo, Adolph Wiedlewsky, and Wally Terrell are setting up for welding upper lugs to an outboard wing cover of the F-14. 'Stars' are built-in spotlights. All welding is done by TV-monitored remote control. (Photo by Bob Settles)



Welding fixture. After stress relieving and shot peening, wing center section assembly being worked on by Mike Napolitano (2nd R) and Tony Drago (R) will go in this tracked welding fixture back into rectangular E-B chamber for welding of wing covers. (Photo by Bob Settles)



Hot forming. Grumman's unique hot forming facility, using ceramic dies, adjoins the E-B welding complex. This is a very valuable F-14 titanium wing skin assembly that has been hot vacuum formed and stress relieved after the E-B welding of the pivot fitting. Skillful handling is required, and, using vacuum lift, that's what it's getting from (L to R) Bill Hicks, Charlie Zolek, Tom Cuce, and Joe Randazzese. (Photo by Marie Trimborn)

Weihs rolls record 670 to keep 4 Ss atop Monday Mixed

There may be something artificial about the name the 4 Ss tagged themselves with in the Monday Night Mixed league, but there's nothing fake about the lead they are building over the rest of the loop. The 4 Ss—Arlene Schwemmer, Louise Segar, Ralph Siegel, and a guy named Sid Weihs—were more than 15 points ahead of the Hopefuls at last glance. Part of that lead came a couple of weeks ago when Weihs threw a record-shattering 670 with help from a 246 game. The string topped Joe Guissari's old mark by 33 sticks, and his high game threatened, for a time, Joe Anckner's 251 league standard.

In more recent play, other Monday Mixed standout scores included Siegel's 573, Clyde Schelp's 212-604, Weihs' 209-582, Arleen Schwemmer's 532, Donna Lawrow's 528, and Alan Greenberg's 555. . . . Headliners in Rocket league play were Gary Slater, 566; Paul Grgas, 217-560; Dick Bereis, 561; and Willie Growvogel, 207-512. . . . Ken Smith's 242-592 edged Dom Sansone's 223-584 for Trader league honors recently in action at Oscar's. Other high scores were Tom Wright's 205-555; Steve Kish's 202-552; and Jim Day's 533.

Apa leads Masters

If only Frank Apa had quit after three games. With help from 268 and 234 games, he had climbed to 601. Unfortunately, the Masters league he rolls in computes averages and standings on four games a night, so he had to settle for 851 following a slump in the final game. Even though Frank couldn't quit when he was ahead, there were others —Ken Gutekunst, for example — who fared pretty well in that session. Ken put together games of 245 and 224 to close with 867, second highest series in the loop, and the Sweepers' 2406 and Whoizees' (Whoizees?) 664 now stand as runners-up for team series and game standards. Other highlights: Jack Nielsen's 255-830; Vin Crevoiserat's 259-810; Fred Skirde's 219-795; Fred Dick's 853; Ed Gabriel's 202, 204, 216, 220 for 842; and Bob Herz's 210-24-817.

More recently in Masters' competition, Al Duspiva hit 223-247-828 in a round marked by George Ulrich's 243-816, Gabriel's 233-799, and John Betterino's 225-786. . . . Stan Domagala forged 626 on lines of 204 and 236 to take individual honors in a Red league session a few weeks ago but it didn't help his team very much. Stan owns the Red series record of 669 but the Overruns are coming up short and stand in ninth place in the 10-team loop.

The Peenogees have yet to present the league-leading Sparkplugs with much of a threat in the Classified loop, but Joe Sardi, by tossing 212-244-645 in a recent round, helped his club jump from fifth to third place. And second is just a few points ahead, too. Sal Capitaino hit 230-204-608 in that play, with J. Sirup and J. Donovan at 586. In earlier action, the leading scorers included Bob Hornfeck, 235-213-637; Mort Husted, 204-204-596; Don Otten, 212-590; Bob Dudonis, 222-208-589; Sam Bowden, 215-221-629; Bob Hoehn, 210-602; and Sal Sarro, 207-596.

No 'apple' here

What better time to throw a record game and record series than in a clutch situation—say to save the league lead for your team? No sooner said—well, that's stretching it somewhat, but Gene Burgess did pick a somewhat tense situation in the Patchogue Mixed loop to fire 247-627, both season records, to keep Doing Our Thing ahead in the stretch drive. Other standouts in that action included Dick Lindstrom, 216-578; Bob Geer, 540; Maggie Gaynor, 494; and Val Lindstrom, 490. . . . John Betterino punched out 214-209-620 to head Black scorers, with Andy Bahry second on 202-207-593. Carmine Vitale's 259 in a 583 earned game honors for him. Later Betterino closed with 209-216-596 and Charlie Boscarino finished with 213-577.

No matter how he changes route, John Alston seems to end up at the same destination. A couple of weeks ago in the Outpost circuit, John pitched a 213 and wound up with 585. In the next round, Alston posted games of 204 and 211—and still finished with 585. It was good enough for weekly honors both times; it must have had John talking to himself. John Hahn closed at 570, while Grover Hart and Jim Kelly shared high game of 224. Hart totaled 555 and Kelly 561. Al Hanes hit 203-209-567, Sal DaMato, 200-567; Tony Briganti, 217-565; and Joe Avanzato, 200-562. Other boomers in earlier play included Carl Kohler, 202-201-583, and Bill Gallagher, 211-576.

Lefty Ed Gabriel was the stickout in the Babylon Mixed league as high scorers in the loop have been running into hard times. A couple of weeks ago, Gabriel edged Steve Cominski for honors, 555 to 547. But in the next session, Ed grabbed a piece of the loop's high game record by shooting 257 in a 604 string. Cominski and Pete Jordan share that mark with Gabriel. Janet Thomas' 508 and Roseann Gabriel's 496 paced the women. . . . Ernie Jenkins and Judge Locke are still "sockin' it to 'em" in the Nite Owl circuit. Ernie hit 209-223-627 and Locke chipped in with 213 and 204 to keep the Spoilers riding high in the standings. Other standouts: Rudy Dunkley, 244-203-606; Howie Strohl, 245; Harry Haase, 235.

Veteran kegler John Dudonis took off in the Aerospace league as he snared weekly laurels with 212, 200, 226 and 638. Tony Missale's 233-216-608 was another high total, as was Dick Dickerson's 219-600. Rounding out the high scores were Dan Aquilino, 202-586; Tom O'Connor, 582; Bill Swinson, 206-563; and Dick Corrigan, 241-562. Earlier, Dick Woznick registered 220-596, Corrigan closed with 236-577, and Tony Rivello hit 563.

On the flag!

STUART, FLA.—It didn't take long for Bill Doty to catch on. When he first started playing golf last year, it was someone in the GAA league here who told him the object of the game: get the ball in the hole in the fewest possible strokes.

Here it is less than a year later, and already Bill has achieved what some golfers wait a lifetime for. That's right, he registered his first hole-in-one recently using a 2-wood while playing the 197-yard third hole on the Martin County Golf Course. Witnessing that momentous occasion was Charlie Casella, also of Plant 77.

A hole-in-one has been described as part skill, part luck. Bill had a little bit of both a couple of weeks ago, and, hopefully, some day he'll find the right combination again. Congrats, Bill, from all of us who are still looking for the first one. (Photo by Neil Johnson)

A little bit about a lot of things...

It looks like another good year for the Grumman Gophers. In competition in the L.I. Industrial Rifle League, the Gophers have a clean slate, 4-0, with victories over Brookhaven, Republic, Center Island, and Sperry.

Everything was going along just as well in the South Shore League until the Gophers ran up against Roslyn, a perennial power in the league. Grumman dropped that encounter, 961-984, to put its record at 5-1. Earlier, the Gophers had scored wins over S&W, Rockville Centre, Tampa, Sayville, and DeMott Carman.

Standouts so far for the Gophers have been George Hilton, Hank Womble, and Dick Imgram.

Womble garnered individual honors recently during the Cos Cob Gallery Tournament in Connecticut. Hank, who is captain of the Gophers, finished second overall in open .22 caliber rifle fire, and placed first in the masters class.

Calverton champs

After losing the first game of the Calverton volleyball playoffs to the Spikers, 14-21, the Slammers swept the next three, 21-11, 21-18, 21-18, to win the team title at Plant 6.

Outstanding in the playoffs were Charlie Tyler, Jim Knipe, and Don Loper, who furnished most of the scoring for the Slammers. Others who contributed to the crown were Ernie Maggi, Joe Pipp, Butch Kruse, Larry Mersereau, Ray Diem, Dave Zazewski, and Jerry Kirk.

'B' team rolls along

Dick Cabble fired 266 to lead the Grumman "B" pistol squad to another victory in the L.I. Industrial league recently. The win over Indian Head, 1034-935, kept the Grumman team's record flawless in the pistol competition.

Other high scorers for Grumman were Mort Weinberg, 262, and Bill Boyce and Doug Crooks, 253.

Never too early

Is it ever too early to think about golf? Mike Cherry of the Athletic Association doesn't think so—and he's probably not the only one.

So pick a side, and if you find yourself on the side of Cherry and other golf demons, you may want to make sure your league is checked in with him for the coming season. Mike says that leagues that wish to be sanctioned by GAA and want to get in line early for reserved times at golf courses on Long Island had better call him on Ext. 2133 or 2269 for registration.

If you want to play and don't as yet have a team to play with, Mike may be able to help you there, too. He has openings in the Engineering Blue and Gray leagues, the Tigercat, and is willing to try and make connections for you.

'Super subs' pace Hustler hoop wins

The Hustlers may not prove to be the best hoop team in the Grumman Tuesday night league, but they're sure to be the flakiest. Their latest gimmick: super-subs. That's right, Joe Vosefski and Jim Eckert, billed as super-subs by the Hustlers, gunned in 32 and 31 points respectively to lead their team to a 90-57 win over Propulsion.

And they've got a manager who scores more points for the opposition than for his own team. Tom Cobey scored nary a point, but he did present the Propulsion team with a free shot—it's what they technically call a technical. It was the sixth for him this year in the GAA loop, and he's heading for a record of sorts himself. Right on, Tom!

In their next game, the Hustlers added to their win skein with a 109-70 decision. Their opposition: the Supporters. That's not only a misnomer, but with a name like that they invite all kinds of sobriquets. Oh well, Joe Nunz was serious enough. He scored 26 for the Supporters, but it was a lost cause as Bob Hambrecht hit for 30, Bill Foote and Jim Eckert canned 20 each, and Larry Murphy totaled 19 for the Hustlers.

How to save bucks!

Rolling up savings. **This foursome, being presented with Project Sterling citation by Dan O'Brien (C), deputy for Stock Control, proved that savings can be found in the most unlikely places. Herm Holsten, Walt Kerupetski, Al DeLorenzo, Intra-plant Material Handling manager, and Stan Jastemski, saved hundreds of thousands of dollars by refurbishing unused rolling stock.**

"Found money." That might be the best way of describing an operation in Plant 2 that has been chalking up huge savings for the Company over the past 18 months. Listen to the way Al DeLorenzo, Intra-Plant Materials manager, describes it:

"For a long time, when certain types of materials handling equipment became damaged and unusable, no one really knew what to do with them. What happened? They were never repaired; usually, if they didn't just sit there cluttering up the plant, they were sent to scrap and new ones ordered.

"Now, a production tote box doesn't look very pretty—it's something like a big box on casters—but it's damned expensive. Casters might cost as much as $80 apiece, and support frames go for $400 and up.

"With everybody crying about how much money we spend in this business, we decided that this was one place we could really save the Company some bucks!"

Within six months of setting up a shop in Plant 2 for the repair, overhaul, and maintenance of all Company-owned nonpowered handling equipment, DeLorenzo and Joe Antonowicz, who's manager of the Material Handling section of Industrial Engineering, had compiled an inventory of all nonpowered rolling equipment, together with an integrated identification system to keep check on periodic maintenance. Units that were repaired, but were not needed by production for immediate use, were stored and kept "on call" until they were requisitioned.

As soon as the word got around about the repair shop, Al and his crew—Herman Holsten, Stanley Jastemski, and Walt Kerupetski—were deluged with calls from shop foremen and supervisors.

Impressive record

What does it look like after a year and a half? Judge for yourself.

Al claims that the operation has saved the Company more than $1 million in 1970 alone. There are some who might dispute that—some call it cost avoidance, others say we wouldn't have spent the money to buy new equipment. The Corporate Suggestion office estimates the saving to be around $275,000.

Al sees it differently. The way he figures, his "fixit" team repaired 43 six-foot "A" frames at a cost of $3,200. If the Company had to buy that material, it would have cost $8,600—and that adds up to a savings of $5,400. If you figure in casters, hitches, tow-bar hooks, and a few hundred other items . . . well, the figures get pretty impressive.

No matter how you calculate the savings—$1 million or more than a quarter-million—Al and his crew have proved one thing: big money can be saved in the most unusual places.

If **you** need nonpowered rolling equipment, or have any that needs repair, call DeLorenzo on 2524. He's looking to improve their track record.

They're taming titanium . . .

(Continued from page 6)

A new five-axis numerically controlled milling machine weighing 168½ tons had to have an intricate concrete foundation.

The 19,000 square feet devoted to hot forming of the wing skins posed some large cooling and ventilating problems for Facilities Engineering, Yezek said, but these, too, were handled in a very short time.

Today, visitors come to observe various things. When E-B Welding held an open house for the families of those who work there, the visitors were impressed by the neatness and orderly arrangement. The long hours and tight schedules over a long period became understandable as they saw what had to be coordinated in a highly technical area. Visitors from afar marvel at the efficient tooling and the excellence of the work being turned out.

In so demanding a production regimen, the human element looms large. Each man assigned to E-B Welding and Hot Form, Dickinson points out, understands and rigorously follows the disciplines of titanium processing: cleanliness, handling practices, proper use of equipment, exact techniques. Aware that they are key people on F-14 production, they follow each job description exactly, including the manufacturing operating inspection logs. "Methods operation sheets were never more important than right now," Barfus emphasizes.

Machining and electron beam welding go hand in hand, together producing a center section assembly 22 feet long that looks like one gigantic machined part. Preceding every E-B weld, a machine cut is made on each mating surface, and then, following visual inspection, usually both surfaces of the weld are machined again to permit X-ray, sonic, and dye penetrant inspection operations to be accomplished. (In a few specific areas weight-saving machine cuts are made on the welded assemblies after the welds have been accepted.)

"It takes real craftsmen to do it right," says Dick Kraft, E-B Machine Shop foreman. "Those we definitely have here and in our Maryland and Virginia Plants 56 and 58. Vendor plants, too, around the country."

The whole E-B and Hot Forming area, a plant within a plant, covers 80,000 square feet, or something on the order of two acres. After a full year of operation, plagued at times by the problems inherent in all-new equipment, the manufacturing cycles are well established, Barfus says. "Grumman's leadership in E-B capability is proved by the fact that other major aerospace companies are now planning to procure similar equipment. In the meantime," he reports, "aerospace companies from all over the world are also looking to Grumman to provide subcontract support to them. What we have here in Plant 2 is far ahead of the competition."

CALENDAR of events

Notice of events for period March 12 - March 26 should reach Plane News by **Tues., March 2.**

Amateur Radio Club: Wed., March 17, 5 p.m., Radio Station WA2LQO on the roof of Plt. 5, station housewarm. Emmett Goodman, Ext. 87125.

Amer. Inst. of Aero. & Astro.: Tues., March 23, 6 p.m., Plt. 30 Cafe, dinner mtg. Larry Mead Jr. on "Space Shuttle." Mrs. Jeanne Smart, 595-3086.

Aquatic Assoc. (Swim. Div.): Every Tues., Larkfield Suburban Club, E. Northport. John Reeves, Ext. 7551.

Chess Club: Tues., 5 p.m., Plt. 3 Cafe, tournament, games. Alex Ikonnikow, Ext. 7592.

Dance Club: Tues., March 2, 8:30-10 p.m., St. Francis of Assisi, Northgate & Clay Pitts, Greenlawn, ballroom dance classes, $2/session. Len Luke, Ext. 9682.

Duplicate Bridge Club: Thurs., 5:45 p.m., Plt. 3 Cafe, reserv. not required, partnerships arranged. Pete Harrington, Ext. 1812.

Family Campers: Sun., March 7, 5 p.m., Plant 18, gen. mtg. Bill Lord, Ext. 2914.

Fencing Club: Fri., 5 p.m., Plt. 30 Cafe, competitive fenc. & inst. Joe Campisi, Ext. 1134

Horseback Rid. Club: Every Sun.; for info. call Donna, Ext. 86214 or Caren Carlson, Ext. 2725.

GAA Leathercraft Club: First & third Wed. of month, Plt. 28 Audit., inst. in leathercraft, & new ideas & tech. Cy Dotz, Ext. 86828.

Over Forty Club: Wed., March 17, Amer. Legion Hall, Hicksville, Charles Wagner Post Chap. month. mtg. Frank Mistretta, Ext. 6427.

Pure Bred Dog Club: Mon., March 8, Plt. 18, panel of dog trainers, on "How to Train Professional Home Watch Dogs." C. T. Williamsen, Ext. 3072.

Ski Club: Wed., March 3. 8:30 p.m., Holiday Manor, Hicksville Rd., Bethpage. Lee Badalamenti, Ext. 2171.

Stamp Club: (Bethpage) First 3 Wed. of month, 5 p.m., Plt. 30 Cafe, swapping, circuit bk. sales, auctions. Marty Harow, Ext. 9172.

OBITUARIES

Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.

ALBERT M. SCHMIDT of Instrument Test, Plant 6, died February 12. He was 60 years old and lived at 3 Academy Ct., Patchogue. He had been with Grumman 20 years.

WILLIAM H. CASEY died February 13 at the age of 62. He had been with the Company 26 years. He worked in the Press Dept., Plant 2, and his home was at 47 Oakland St., Huntington.

JEROME J. FEMIA of Plant Protection, Plant 6, died February 13 at the age of 44. He had been with Grumman for 18 years. He lived at 186 Stanley Dr., Centereach.

LEE J. RADIN of Machined Parts/Material, Plant 30, died February 20 at the age of 61. He lived at 968 Little Whaleneck Rd., North Merrick, and had been with Grumman six years.

BERNARD J. TALBOT died February 20 at the age of 53. He had been with the Company since 1966 and his department was P/S Technical Writing, Plant 34. He lived at 334 Park La., Massapequa.

ROOSEVELT BRITTON of Facilities Maintenance, Plant 4, died February 21. He had been with Grumman three years and he lived at 115-27 147 St., Jamaica. He was 44 years old.

CARMINE T. GENOVA of Tanks & Ducts, Plant 2, died February 21 at the age of 61. He had been with Grumman 19 years, and he lived at 75 Valentine Ave., Glen Cove.

Ride Wanted

BKLYN.: Ocean Pkwy. & Church Ave. to Plt. 15, 8:12 - 4:42. 212 853-4412.

OAKDALE: To Plt. 3, 7:30-4 p.m. LT 9-7595.

For Rent

STUDIO APT.: Plainview area, furn., pvt. ent. WE 8-1151, after 5:30.

ROOM: Hicksville, pvt. home, gent. pref. WE 5-2466.

STUDIO RM.: W. Islip, furn., pvt. ent., bath, refrig., hot plate. 587-7539.

ROOMS: Nr. Grumman, pvt. ent. & bath, kit. priv. PY 6-4210.

ROOM: 15 mi. Bethpage, lrg. furn., pvt. bath, kit. & laundry priv. avail., gent. pref., $80/mo. OR 1-4083.

SKI LODGE: Weston, Vt., 3 bdrm., nr. Magic, Okemo, Bromley, Stratton, 5 day wk. spec., wk. ends, avail. off season. 212 291-4891.

Wanted

APT.: 3½ rm. for yg. work. couple, Apr. or May. PY 6-8378.

APT.: 1 bdrm. furn., nr. Bethpage, for yg. Eng. couple, Apr. 757-1651.

HOUSE: 1 or 2 bdrm., for retirement home, nr. Bethpage. FR 8-2507.

OARS: And/or sma. outbd. eng. for 14 ft. boat. 732-3552.

ENCYCLOPEDIA: Recent edition of World Bk. or Merit Students. 543-2887.

GRUMMAN CANOE: 15 or 17 ft., gd. cond. AM 4-1565.

GRUMMAN CANOE: Any sz. 924-3835.

For Sale

BOAT: '67, 17 ft. Glasspar Sea Farer sed., Navy tp., hd., slps. 2, '67, 60 hp Johnson, xtras $2,000. TN 8-9828.

SCUBA GEAR: Voit tank w/reg., back-pack, tankboot, pressure gauge, 15 lb. wgt. belt., $110; U.S. divers sz. small 3/16 in. full wetsuit w/hood & gloves, $50. 751-1074.

PORSCHE: '70, 914, Irish grn., saddle int., AM/SW radio, Borsch exh sys, 5-spd trans., Pirrelli radials, fact. maint., 4,000 mi. left on warr., $3,050. 887-1864.

OLDSMOBILE: '69 Cutlass Supreme, 4-dr. hdtp., pwr. steer., bks., & wind., vinyl. roof, air cond., auto., xtras, $2,495. OR 6-2719.

MISC.: Austin-Healey MK III 3,000, muff./tailpipe, & misc. parts; approx. 120, 78 rpm records, from '30-'53, $25. 234-0337, after 5:30.

CORVETTE: '63 Stingray coupe, red, 4-spd., comp. rebit. 327 c.i., 365 cam, new clutch, radiator, gl.-pacs, batt., & 336 posi., recent bk. job, 56,000 mi., $2,100. SE 2-2525.

CORVETTE: '64, 365 hp, '67 int., xtras, $1,700. PE 1-3244.

MERCEDES BENZ: '64, 190c, 4-dr., air cond. JU 7-0428, after 5.

RAMBLER: '63 Classic wag., eng. nds. work, gd. bdy. & run. gear, $25. HR 3-3482.

TRAVEL TRLR.: '68 Swinger, slps. 6, self cont., $2,000 w/hitch. 585-2332.

PARTS: MG Midget/Sprite, fit '62, or later mod., most Bugeye, whls., soft tp., 950 block, pan, hds, carbs, bdy. parts, transm., make offer. 694-3537.

ENG.: '65 VW, 40 hp, rebit. & instal., $150. 273-6239.

TIRES: Snows mtd. on '66 VW whls., $15; reg. 8.25x14 mtd. on '58 Olds whls. WE 8-7661.

MISC.: 4 Sears tires, Silent Guard, mtd. on GM rims, $20/ea.; '64 Johnson 90 hp outbd., $350. 735-4231.

HOUSE: Ft. Salonga, 9 rm. col., 5 bdrm., 2½ bath, form. liv. & din. rm., fam. rm. w/firepl., 2 car gar., wood. acre, 2 yr., assum. mtge., ask. $55,000. 757-2061.

HOUSE: Huntington, true ctr. hall ranch, 3 bdrm.. 2 full bath, panel, den w/firepl., eat-in-kit., form. din. rm., 2 car gar., full bsmt., patio, fenc., prof. lndscpd., ½ acre, xtras, $44.990. 757-8496.

HOUSE: Strongs Neck, Setauket, 3 bdrm. ranch, 2 bath, panel. fam. rm., din. rm., 2 firepl., brick patio, w-w, appli., gar., ½ acre, pvt. bch. rgts., ask. $45,000. 941-4048.

BED: Full sz., box spr., matt., & frame, $80. WA 1-5838.

For Sale

HOUSE: Smithtown, wide cust. ranch on court, ½ acre wood lot, eat-in-kit., form. din. rm., fam. rm., 2 car gar., patio & fenc., nr. sch. & Mall, 6% mtge., $36,500. 724-3711.

PROPERTY: 1/3 acre waterview, Shoreham on Sound, wood. hi-grnd., pvt. bch., resid. comm., 9 mi. Plts. 6 & 7, $8,000. HA 1-0764.

MISC.: French prov., 8 pc. din. rm. set, 6 chrs., tbl., buff., $200; Magnavox 25 in. TV, AM/FM stereo, $200. 938-5091.

MISC.: African oak blk. din. rm. set, $175; coffee & end tbl., bleach. oak, grn. lea. tps., $50. 921-0865.

AIR COND.: GE ¾ ton cap., 110AC, $60. WE 8-0770.

RANGE: GE elec., wh., $55. 731-4609.

EQUIP.: TV antenna VHF/UHF, deep fringe area design, Finco CS-D3 w/100 ft. of CO-ax. twin-lead, 26 elements for UHF, 10 VHF elements, $45. 334-0735.

MISC.: Sol. maple din. tbl., 3x5 ft., stain resist. tp., $65; Stromberg Carlson stereo maple console, $70. FO 8-1182.

TV: 14 in. port. GE, B/W, $30. 543-2423.

For Sale

MISC.: '70 Starcraft camper, $1,050; '70 Starmaster camper frace incl. bk. unit & whls., $150; 1 ton mech. hydraulic jack, $25. JU 4-6633.

STEREO: Sears record play., 1 yr., 2 spkrs., 2 tone cont., $50. WE 5-0868.

EQUIP.: Bogen 50w amp. & tuner, 5, 12 in. sep. Universal spkrs. for ceil., for home or PA, $100. CH 9-1023.

STAMPS: 1st day cov. '48-'58, letters (1,036), cards (52), best offer over $75. 543-2423.

CAMERA: & projector, 8mm Keystone, $50. 212 639-2034.

EQUIP.: Wurlitzer instr. amp., 75w, 8, 8 in. spkrs., 2 channel stereo mixer hd. w/reverb unit, all transistor, $60. GR 5-9369, after 4.

FURN.: 6 pc. wal. bdrm., ngt. std., dresser. chest, dress. tbl., chr., $75; 6 pc. blond jr. dinette set, tbl., 4 chrs., china, $75. MY 4-5543, evgs.

SAW: Radial arm, comm. dty., 10 in. B&D DeWalt, w/std. & dado blades, 1 yr., $200. 269-9306.

CHEVROLET: '67, 4-dr. sed., 8 cyl., pwr. steer., auto., new Monroe-matic shocks, 2 new w/w, 2 stud. snows, $950. 724-2959, after 7.

at your SERVICE

This is a free service to Grumman personnel for non-commercial advertisements, accepted on a first-come, first-served basis. Classified advertisements are carried in PLANE NEWS only on the basis that everyone replying to such advertising will receive fair and equal consideration regardless of their race, creed, color, or national origin.

Type or print ad on form available at Employee Services and Engineering counters, and send via interplant mail to PLANE NEWS, Plant 5, Bethpage. List home phone (with area code if outside Nassau or Suffolk). Limit: one ad per person per issue. No item under $10, no firearms or ammunition.

CAB. CRUISER: 22 ft. Owens, inbd., 6 cyl., 98 hp, slps. 2, hd., galley w/xtras, safety equip., etc., ask. $1,050. PE 5-4281, after 5.

ACCORDION: LaTosca, 120 bass w/case, $100. 742-0746, after 3.

R/C EQUIP.: Logitrol 2, 5 channel, 5 servos, $100. 472-3899, after 6.

MISC.: Bike exerciser, $12.50; adj. draft. tbl., 31x23, $10. 643-8493.

IRISH SETTER: Male, AKC, shots, $90. JU 8-0962.

WINDOWS: Casement w/screens, 2, 37x27, 1, 57x27, steel. 231-8442.

VALIANT: '65, 4-dr., new clutch, 78,000 mi., $275. 666-4275.

LINCOLN: '63, 4-dr., full pwr., all options, $795. PO 7-0852, after 5.

CHEVROLET: '62, std., 6 cyl., $200. 744-1741.

TRUCK: '64, 1 ton Chevy, no bed, ideal for camper, 6 cyl., $500. RO 6-0713.

MOBILE HOME: '69 Ritz Craft 12x52, can remain in pk. or move, Bay Shore. 666-7265.

HOUSE: E. Islip, 3 bdrm. cape, panel. den, comp. redecor., sanitas wall cov. & acoustical ceil., w-w, s-s, red alum. sid., appli., lndscpd & fenc., patio, o'sz. gar., $23,500. JU 1-7790.

BDRM. SUITE: Mod. lgt. maple, refin., twin bds. w/hd. bds., dbl. dress. w/mirror, desk w/chair, $175. LT 9-4408.

MISC.: Admiral port. hi-fi record play., all spds., $15; 3 Reader Digest rec. albums, 10 lg. play. ea. album, $15; 33-spd. pop. & classic rec. WA 1-2703.

BEAMS: Decorator weather. beams of polyurethane plastic, 10 ft. lgth., $10/ea. 473-2629.

AMP.: Kustom 200, 2-15s & 2-10s, new, $450. PY 9-6851.

RENAULT: '59 with '65 eng., $75. 732-3552.

MAVERICK: '70 jade grn., R&H, w/w, auto., deluxe pkg., $1,595. 671-0517.

TRIUMPH: '68 Spitfire, wh. conv., new tp., tires, & batt., 23,000 orig. mi., $1,400. 226-4171.

MISC.: Sunfish & trlr., wh. w/red trim, fbgl., xtras, $550. 921-3487.

TRK. CAMPER: 14 ft., fits 10 ft. ¾ ton pickup, slps. 4, propane gas stove & lgt., equip. for 12VDC & 110VAC, w/Bock jacks, $600, w/o $550. GR 5-9144.

HOUSE: 18 rm. col., 3 firepl., ctr. hall, 7 bdrm., 4 bath, sun rm., formal ballrm., refrig., laundry & coat rm., lndscpd., xtras, $63,000. 271-2363.

FORD: '68 Galaxie 500, 4-dr. hdtp., V-8, pwr. steer., 29,000 mi., $1,525. 822-3107, bet. 10-4 p.m.

VW: '71 Fastback type 3, low mi., R&H, w/w, orig. warr., xtras, $2,300. 751-3512, after 6.

PLYMOUTH: '67 Sport Fury, red & blk. int., vinyl tp., auto., pwr. steer., bks., & wind., radio & rear spkr., bkt. seats & cons., snows, low mi., ask. $1,400. 799-1795, after 6.

MISC.: '68 Oldmobile, 442, 400 c.i., 4-spd., 8 trk. stereo, 24,000 mi., $1,895; '66 Chevy 327, SS, 4-spd., posi, Buck, Sun, Holley, crane cam, Hedman hdrs., $1,295. AN 1-3781.

MOTORCYCLE: '66, 305cc, $350. 671-0517.

HOUSE: Syosset, 3 bdrm. ranch, 3 yr., comp. fin. bsmt., xtras, pmts. $207 on takeover of 6% mtge., $37,490. 921-0748.

HOUSE: Huntington, 2-lvl. ranch on ½ wood. acre, 7 rm., 3 lrg. bdrm., fin. rec. rm., 2 car gar., 2 bath w/gl. stall showers, blt-in gas range & oven, new appli., g.h.w. heat, s-s, $47,000, prin. only. 423-2485, evgs.

HOUSE: N. Central Islip, 3 bdrm. ranch, w-w in liv. rm., 15x24 playrm., full bsmt., attach. gar., fenc., $23,990. 234-6680.

HOUSE: Huntington sch. dist. 13, 3 bdrm. ranch, fam. rm., eat-in-kit., din. area, lndscpd. & treed, 70x130, xtras, ask. $29,990. 427-3921.

MISC.: 1 coff. & 2 end tbls., birch, 1 Dutch hutch, pine, 1 pine gun cab., $75 comp. AN 5-1024.

BOOK: Psychology I by Deese. 694-7349, after 5.

ORGAN: Estey 2 keybd. chord, w/bench, $125. HA 7-6854.

HEADERS: Hooker #5203 for Mopar 383 or 440 eng., never mtd., ask. $85. 775-7752, after 6.

TBL.: Mahog. din. w/ped. & leaf, $50. TA 6-3137.

BOAT: '57 Marblehead, 23 ft. cab., 125 hp Palmer, slps. 2, hd., galley, xtras, $2,300. PE 5-6474.

TIRES: 2 snows, 735x14, used 1 season, $10/ea. BA 3-0117.

MISC.: Ford 14 in. whls. w/valves; 1, 695x14 tire; transistor under dash car radio. 585-3690.

MISC.: Bicycle parts, tires, whls. & frames. 271-4486.

MOVIE CAMERA: 8mm, DeJur 925 fully auto. elec. eye, case, tripod, pwr. zoom lens, man. override, focuses 1 ft.-infinity, auto-pan., blt.-in filt., $50. 212 523-2502.

EQUIP.: Radio cont., pulse proportional, Hallco 123TA, xmtr. & rec'r. w/NiCad batt. pack & chgr., $80. 543-4693.

For Sale

AMP.: Natronics, piggy bk. w channels, 2 Jensen 12 in. spkrs., reverb & trem., ask. $125; ash fuzz box. PY 8-5842.

AM. RADIO EQUIP.: Heathkit Apache transmitter & SB 101 sideband adapter, manuals, incl. LO 1-8651.

MUSTANG: '66 GT Fastback, 4-spd., new disc bks. & muff., xtras, 56,000 mi., $1,200. 289-3572.

MISC.: Westinghouse stereo 4-spkrs., 2 tweeters, rgt. & left vol. cont., port., $30; wgh. set, 120 lb. cast iron, $10. IV 1-9356.

MISC.: Baby crib, fold. coach carr. & car seat, $40; Paragon oil burner motor & pump, $20. 822-1088.

TEXTBKS.: Sociology by Broc & Selsnick & Readings in Sociology by Cuber & Harroff. 271-3208, evgs.

PUPPIES: Germ. shorthair. pointer, AKC, champ sire, dam of champions, field or show. 589-7858.

KITTENS: Siamese, $25. 271-1364.

MISC.: Deluxe pwdr. blue winter wgt. fold. carr., $25; wal. mod. crib, $25; misc. nursery items, bassinet, etc. 289-0815.

HAIRSETTER: Lady Clairol deluxe instant, $20. MY 4-5068.

EXERCIZER: Elec. bicycle, triple action mov. seat, handle bars, ped., $100. 212 IN 1-9125.

MISC.: New G. E. Golden Crown exposure meter type PR-3, $10. MO 9-1650.

CAMERA: 35mm TAC deluxe, used, lgt. meter, flash attach., 4 filt., wide-angle lens, wide-angle viewer, tele lens, & viewer, lens shade, all have individ. cases, best offer. 744-9040.

MISC.: 19 in. Zenith port. TV; 21 in. Andrea port. TV, $10/ea.; Kenmore wash. mach., $25. PY 6-8019.

PRECISION TOOLS: Micrometers, dial caliper, dial indicator, $20/ea. 744-3365.

VW: '66, Bug, grn., radio, 2 xtra tires & rims, 57,000 mi., $725. 543-3760, after 5:30.

OUTBD. BOAT: '60, 18 ft. Shoup Princess, '66, 50 hp Merc. outbd. motor, fully equip., $1,250. PY 8-6382.

HOUSE: Deer Park, 9 rm. split, 3 bdrm., fam. rm., rec. rm., o.h.w., s-s, w-w, 5 appli., air cond., humidifier, wood panel. & cork., lndscpd., fenc., alum. front sid., brick patio, low tax, nr. shop, sch., churches, trans., 6½% mtge., $32,000. JU 6-4292.

HOUSE: Ridge, cust., 3 bdrm., din. rm., fam. rm., 1½ bath, firepl., gar., cedar shingles, lndscpd. ½ acre, circle drive, 140 ft. front., 2 yr., $29,900. 924-4487.

AIRPLANE: Stinson 108-1, fuselage rdy. for cov., left wing tip nds. repair, all metal paint, Ceconite envelopes, eng. 525 SMOH, new prop, VHT-3 radio, F.G.P. 724-0326.

DART: '70, 4-dr. sed., pwr. steer., tint. windshld., less than 900 mi., xtras, $2,500. 266-2421, after 5.

COMET: '61 Mercury, 4-dr. sed., 4 new tires, nds. some work. 731-5693.

OLDSMOBILE: '67 sta. wag., cust. Vista Cruiser, 8 pass., auto., pwr. bks. & steer., air cond., tint. gl., roof rack, trlr. hitch, low mi. 744-6653.

PONTIAC: '65 Catalina, 4-dr., auto., V-8, pwr. steer. & bks., w/w & snows, R&H, air cond. PI 7-1097, after 7.

STA. WAG.: '66 Chevy, 283, V-8, auto. LT 9-2701, after 5.

CYCLE: '65 Triumph 650 Bonneville, dual carbs, sport pipes, $750. PY 8-6103.

HOUSE: Bethpage, mother-daugh. Cape, 4 rm. & bath down, 2 rm. kitchenette & bath up, nr. Grumman, $29,000. OV 1-6323.

HOUSE: Oceanside, 2 bdrm. up, 2 bdrm., liv. rm., din. rm., kit., bath down, full bsmt., detach. gar. o.h.w. heat, w-w, $28,500. 766-2661.

HOUSE: Levitt cape, 6 rm., carport, gar. & fen. bk. yd. L. Rasweiler, Ext. 2398.

HOUSE: Oyster Bay, 3 bdrm. brick split, fam. rm., 2½ bath, 2 car gar. w/auto. drs., full tiled bsmt., alum s-s, o.h.w. 2 zone, blt.-in-fire alarm, air cond., att. fan, 5 appli., xtras, 4¾% mtge., $49,000. WA 2-3860.

MISC.: Fisher 500C receiver; Roberts 1725-8L tape record, w/ 8 trk. cart. record, facil.; 2 Wharfdale A40 spkrs.; Roberts 720 tape record., used about 150 hs., $500 or $350 w/choice of record. WE 5-4822, after 5.

MISC.: 1/7 scale Dahngren cannon, 1 in. bore, Marsilly carr., $47.50; ½ scale Coehorn mortar; 2¼ in. bore, sled mount, will demon. 587-1580, after 6.

EQUIP.: Heath HR-10B rcvr. w/100 KHZ crystal, rcr's CW-SSB-AM sig. on 80 thru 10 mtrs, $60. LI 1-8079, evgs.

TREES: Colorado blue spruce, Norway spruce, silver fir, yews. 281-2678.

MISC.: Pants suits, woman's clothing. MY 4-7384.

For Sale

FIAT: '70, 850, hdtp. racer, red/blk. vinyl tp., AM/FM stereo, 5 Pirelli radials, 2 Pirelli radial snows, 34-38 mpg, $2,100. 667-9176.

OLDSMOBILE: '63, pwr. steer. & bks., auto., air cond., new bks., shocks, R&H, best offer. 212 229-8430.

HOUSE: Huntington, 2 fam., 5 rm. over 6, auto. 2 car gar., full bsmt. w/sep. ent., oil heat, s-s, 100x110, lndscpd. 427-4720.

MISC.: Lrg. mahog. dress. w/mirror & 3 mahog. tbls. 223-0945.

BDRM. SET: Spanish, queen sz. bd., 5 ft. dress. w/2 mirrors, 44 in. chest, 5 mo., $600. 764-6628, after 6.

COCKER: Male, AKC, 6 mo., full shots, lgt. buff tan, $75. MO 9-8490.

MISC.: 2 Altec Lansing mod. N501-8A crossover networks; 8 ohm impedance, 12 db/octave, L-C type, 500 HZ cross-over freq., both $75. W. Rankin, Ext. 87368.

MOTOR: 6 hp West Bend outbd., used, tuned last fall $150. AT 6-8772.

MISC.: Airplane navig. aids, Kane Mark VI, metal, dead reckoning computer w/inst. manual & Jeppesen PN-1 plotter, $10. Neil Klaskin, Ext. 1795.

BOWL. BALL: Blk. Ebonite 16 lb., $10. 731-4609.

TRANSMISSION: Powerglide, comp. reblt., 283-327 Chevy, $80. 212 347-6516, evgs.

PROPERTY: Wading River, 125x150, pvt. bch. 368-3048, after 5.

MISC.: Vox Buckingham amp., 2-12 in. spkrs., MRB effect, reverb, trem., 3 channels, $200. AN 1-3261.

MIXER: Hamilton Bch., mod. 21, hvy. dty., new, 2 stainless steel bowls, beaters, $40. AN 9-4065.

MISC.: Baby carr., port. coach, infant seat, walker, $50. 694-5622.

PUPPIES: 6 wk. Irish setter, all shots, champ line, reason. 586-6881.

MISC.: Seeberg 100 juke box, $100; Bridgestone 50cc, '70 motorcycle, $150. MO 9-9316.

SLIDE VIEWERS: TDC Selectron, semi-matic, 35mm w/12 trays, $10. HU 8-3102.

PANASONIC: AM/FM multiplex, cassette tape, record & play, std. stereo unit w/2 sep. spkrs., $195. MA 7-0922.

WIG: 100% human hair, honey brown, new, short, $30. 586-2446.

DIA. RING: Lady's, 90/100 carat & 2 baguettes, 20 pts., appraised $1,250, best offer over $700. Art, Ext. 1491.

COLL. ITEMS: Post. stamp albums, Scott's 1894, 2 vol., $30 CV stamps, $15. 543-2887.

DRUMS: Gretsch bass, snare, tom tom, cym. & hi-hat, xtras, $75. PY 6-0621, after 5.

MISC.: Schwinn boy's 24 in. bicycle, $15; mini car race set, mtd. & 3 cars, $10. 277-1971.

LAMP: End tbl., blue & wh. base w/off-wh. bbl. shade, $20. R. Schantz, Ext. 87138.

WELL PUMP: W/tank & access., 1/3 hp Gould mod., $25 as is, you pick up. MO 9-1882.

plane GRUMMAN news

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For Sale

LAWNMOWER: Rid., 6½ hp w/metal grass catcher, 24 in. blade, 1 yr. 433-3013, after 5.

T-BIRD: '67 Landau char. grey, full pwr., air cond., $1,695. 757-7464, after 6.

CADILLAC: '60 Fleetwood, 2-dr. hdtp., 4 new tires, & matt. Pl 2-0174, after 5.

CORVETTE: '67 conv. w/hdtp., one owner, $1,200. 724-0789.

TRIUMPH: '70 Spitfire, BRG, AM/FM, tonneau, new snows, under warr. IV 1-1947.

VW: '70, std., under warr., $1,695. 273-8151.

VW: '68 Bug, R&H, under 26,000 mi., all serv. records, $1,200. 423-6257.

CAMARO: '69 SS, 396-375 hp. AM/FM, 410 posi, fact. gauges, poly tires, 10,000 mi., full fact. warr., $2,500. WE 1-8486, after 5.

OLDSMOBILE: '65 Starfire, low mi., all pwr., bkt. seats, best offer. 757-2042.

SAILBOAT: '62, 16 ft. Marauder, keel/ctr. bd., moulded plywood/fbgl. cab. sloop, 2 bunks, floatation, dacs, $750. 421-9336.

HOUSE: N. Central Islip, 3 bdrm. ranch, carpet, in liv. rm., eat-in-kit., 15x24 playrm., full bsmt., attach. gar., fenc., $23,900. 234-6680.

HOUSE: Islip, 4 bdrm. cust., brick & cedar, 2 tiled bath, full bsmt. 60% fin. w/bar, 3 zone o.h.w., plaster, w-w, s-s, cov. slate patio, 100x100 treed, lndscpd., copper gutters, oak fls., xtras, $35,000. JU 1-9332.

HOUSE: Bethpage Pk. area, 3 bdrm. brick split, 2½ bath, pan. den w/firepl., full din. rm., eat-in-kit., 2 car gar. w/auto. dr. & heat, lrg. bsmt., central air cond., o.h.w., fire alarm, patio, all appli., lndscpd. & fenc., nr. RR & stores, $46,990. 822-3214.

FURN.: Contemp. wal. cocktail tbl. w/match. end tbls., best offer. 751-4923.

REFRIG./FREEZER: 16 cu. ft. Gibson frost clear, coppertone, 9 mo., freezer holds 129.5 lbs., $200. HA 7-8281.

MISC.: Port. Hoover 6 lb. wash. mach., mod. 0500, apt. sz., $75; antique maple tbl., gate leg, drop leaf, seats 12, ask. $75. 842-0110.

TIRES: Snows mtd. on '66 VW whls., $15; reg. 8.25x14 mtd. on '58 Olds whls., WE 8-7661.

MISC.: 2 snows, 750x14 on rims, $20/pr.; car rack, $10; spd. read. mach., $90; brown human hair fall, $25. CH 9-9344.

BOAT TRLR.: 14 ft., new, $100. 277-3004, after 6.

MANGLE: Hotpoint elec. ironer, $10. 266-1049.

INBD.: 19 ft. Ketcham, comp. sand. to wood, caulked & paint., fbgl. cab., deck, transom & seams, 4 cyl. Gray Marine, new batt., xtras, $300. 277-9415.

SLOOP: 26 ft. LOA Pearson Cmdr., 8 ft. beam, slps. 4, hd., 6 hp aux outbd., Hild main, jib & Genoa sails, $5,950. 261-1186.

MISC.: Acetylene outfit incl. tanks, gauges, hoses & cut. tips, rdy. for use, $200 or best offer; hydraulic bolt cutter, ⅝ in. cut. cap., $125 or best offer. 665-7104.

BOWL. BALL: Blk. Ebonite, 16 lbs., $10. 731-4609.

MISC.: AC VTVM, HP, 400c, $25; EICO sig. gen., $25. 727-7831.

DRUM SET: 4 pc. Prestige, $95. TU 8-7552, after 3.

GOLF CLUBS: 10 irons, 2 woods, bag & cart, $75. FR 9-0163.

FURN.: Juvenile bdrm., Edison chest, $20, dresser, $25, wal. hdbd. & frame, $20; dbl. bd. bk. case hdbd. & frame, antique gold. 744-5820, after 5.

CARR.: Atlas coach, conv. to car bd., reason. 261-9132.

MISC.: Pentax Takumar 135 mm tele lens, f3.5, fully auto., w/lens-hood & hard leather case, never used, $115. 541-8335, after 5.

DIN. RM. SET: 8 pc. African oak, blk., $150. 921-0865.

WEIMARANER: Male, reg. AKC stud bk., all shots, champ blood, 4 yr., outdr. kennel bred for hunt., $75 or exch. for beagle pup, ped. 588-8724.

COAT: Blk. Persian lamb, mink trim., sz. 20, midi, 4 mo. SU 1-0495.

FORD: '67, 4-dr. sed., 6 cyl., auto., new snows, ask. $750. 212 VA 1-5782.

FORD: '68 Mustang Fastback, 8 cyl., 289, 4-bbl. carb. 735-8542.

STA. WAG.: '56 Ford, new tires, transm., shocks, seats, batt., & bks., R&H, $300. HA 1-3479.

VW: '61, blue, radio, $250 or best offer. GE 7-4898.

DATSUN: 240Z, yel. w/bl. int., 2 pass., 50 HC, 6 cyl., 150 hp, 4-spd., elec. rear defogger, sig. seek radio, pwr. ant., radial tires, heater, $3,600. AN 5-3946.

For Sale

DODGE: '65 Coronet, 6 cyl., 2-dr., auto., $400. 567-0175.

TEMPEST: '65 conv., auto., 6 cyl., $495. 751-3446.

COUGAR: '68 Merc., GT-XR7, pwr. steer. & bks., vinyl roof, xtras, $2,200. 289-2043.

GTO: '69 Pontiac conv., 4-spd., pwr. steer. & bks., tape deck, gauges, blue w/wh. int., xtras, $1,895. 798-5865.

STA. WAG.: '64 Chevy Impala, V-8, pwr. steer., auto., R&H, w/w, snows, $575. JU 4-7348.

VW: '64 Bug, new hds., valves, muff., tune-up, mtd. snows, R&H, gas gauge, $500. 732-7232, after 6.

MINIHOME: Ford Econoline 123 deluxe camper, V-8, auto., R&H, hvy. dty. pkg., low mi., fits in gar., xtras, ask. $4,650. PY 8-6805.

HOUSE: Islip, 3 bdrm. ranch, full bsmt., s-s, lndscpd., $23,500. JU 1-2719.

HOUSE: Inverness, Fla., cust. duplex, suit. retirement, 2 bdrm. ea. apt., front. on golf course, lake, air cond., heat, community ctr., pic. avail., $8,000 cash over. MO 5-1628.

PROPERTY: S. Jamesport, corner 115x140, deed. pvt. bch. rgts., 2 marinas in area, below mkt. price. AN 5-8607, evgs.

REFRIG.: 10 cu. ft. G.E., coppertone, $15. PY 6-5160, after 6.

DEN SET: 7 pc., sofa bd., reclin., club chr., 2 end tbls, 2 lamps, $125; 5 pc. dinette set, brown formica, $50. 293-9366.

AREA RUGS: 3, 6x9 ft. avocado, gold, beige, $25/ea. 472-3899, after 6.

HOUSE: Huntington, Greenlawn, 3 bdrm. ranch, panel, den w/firepl., lrg. eat-in-kit., appli., heat. base 2 zone heat, patio w/awning, 2 car gar., sodded underground sprinkler, $46,500. 757-8322.

MISC.: '57 Evinrude 35 hp, gas tank, contr. & new ocnt. cables, $100. HR 2-0581, after 6.

HAM EQUIP.: Johnson Ranger, transmitter, 75w, Hallicrafter SX-111 rec'vr. 10-80M w/xtras, best offer. 767-2839, after 6.

AMP.: Marantz mod. 15 sol. state stereo pwr., w/wal. cab., $200. 546-6965.

CAB. CRUISER: '64 Broadwater 27 ft., 210 Chrysler inbd., slps. 4, full galley, hd., xtras, ask. $3,500. MY 2-5928.

BOAT: 12 ft. alum. Starcraft, 5½ hp Johnson, '70 Cox trlr., access., $300. Joe Caselles, 57-456.

HOUSE: Sayville bayfront, 3 bdrm. ranch, bulkhd., sandy bch., o.h.w. heat, 75x200, view of Fire Isl., $39,990. LT 9-6203.

TAPE RECORDER: Sony stereo, TC-200, $100. 281-9076, after 5.

MISC.: Human hair blonde wig & case, $20; Nat'l. elec. slicer, $20. 598-0344.

SAAB: '63, as is, $90. 294-0097, after 6.

STA. WAG.: '64 Chevrelot Biscayne, 62,000 mi., 8 cyl., $500. 587-7093.

Playing fair?

Just about everybody reads the classified ads, and a good many articles, from houses to bowling balls, change hands. Plane News has heard a few complaints, but never one so bitter as the Grummanite who made an appointment to go and look at a piece of furniture. When he arrived at the appointed time, it had been sold. "Grummanite - to - Grummanite, the people should have stuck to their bargain and let me look at it, since I had been the first to call," he said.

They couldn't have guessed how disappointed he'd be. Fair play is urged in ads as well as in everything else around here.

HOUSE: Farmingdale, cust. 7 rm. ranch, 3 bdrm., fin. den, gar., air cond., w-w, appli., $35,990. CH

FORD: '66 Cust., V-8, R&H, snows, $800. JU 7-2907, after 6.

VW: '67 yel. conv., $1,000. 599-6231.

DODGE: '61 Dart, 6 cyl., std., 4-dr. sed., ask. $125. 212 FI 1-1823.

FORD: '66, 4-dr. sed., 6 cyl., auto., pwr. steer., R&H, 63,000 mi., orig. owner, $700. 261-8326, after 6.

FAIRLANE: '65, 4-dr., auto., 6 cyl., pwr. steer., new carb. & shocks, $550. WE 5-3722, after 5.

CHEVELLE: '68, 2-dr. Malibu, pwr. glide, blk. vinyl tp., pushbtn. radio w/rear spkr. & antenna, posi., rear defrost., new w/w & bumper guards, $1,695. 822-2936.

VW: '67 red Fastback, 4-spd., w/w, full whl. cov., P/B radio, elec. windshld wash., new bks., exhaust sys., elec. clock. 212 523-2502.

FORD: '68 Galaxie 500, V-8, 4-dr. hdtp., auto., pwr. steer., 30,000 mi., $1,525. 822-3107, bet. 10-5 p.m.

CLUB WAG.: '70 Ford cust., V-8, A-R-H, 15 in. tires, snows, 6,000 orig. mi., ask. $2,900. 666-4019.

PLYMOUTH: '68 Road Runner 426, auto., AN 5-4064, after 6.

RAMBLER: '60 cust., 4-dr., 6 cyl., auto., pwr. steer., $60. WE 8-2837.

PARTS: Chevy pwr.-pack cyl. hds., Crane spgs. alum. retainers, pinned studs, assem., $40/comp. JU 5-8992.

Decade of safety. **National Safety Council has honored Grumman for 10 years of OAO Program manufacturing and test without a disabling injury. Ted Moorman (L) is OAO manager, Vice President Ralph Tripp (C) is OAO and LM Program director, and Senior Vice President Joe Gavin is Space Programs director. Another award, from Travelers Insurance Corporation, cites Grumman for eight million man-hours on LM without a disabling injury. (Photo by Harry Prodromides)**

GAA sets March 1 kickoff for annual member drive

"So you think you've got problems. Yeh, you say things ain't as good as they used to be. You say a buck ain't a buck anymore . . . that when you look into the eyes of good old George Washington, he's starin' back atcha . . . angry . . . maybe a tear about to run down his cheek—

"Okay, friend, I tellya what I'm gonna do!"

(In the background, building to room-shaking volume, come the strained strains of The Washington Post March. The life juices get flowing, hearts pound.)

"Yes, friends, indeed I will tellya what I'm gonna do! Friends, right before your very eyes—watch closely and hear me well—I'm gonna s-t-r-e-t-c-h that dollar. I'm gonna make that dollar more than it's worth!"

(Gasps. Some smiles and snickers. A few shake their heads and walk away silently into the long darkness of night. Down close to the stage, a couple of guys whip out notebooks and pencils, start scrawling feverishly; and a couple of guys near those couple of guys whisper, "Ah, FBI." "Naw, Treasury." "Na! Green-ink salesmen lookin' for a press." A little old lady screams "but that's not legal!" and starts wielding a hardwood cane, indiscriminately bopping craniums —or is it "cranei." From out of the big-throated bullhorn comes a mandate to shut up.)

Hurry, hurry, hurry

"Ah, yes, a simple formula, a little piece of paper for a growing buck—and a chance at a pot of luck!! Yes, listen my children and you shall hear of the exciting road to fun and cheer, a dollar today to ol' GAA, and guys and dolls, you're on your way!"

Ah, the magic carpet of GAA (Grumman Athletic Association) that, for some 30 years, has been the hub of an ever-enlarging activity wheel, needs its annual shampoo. To keep the carpet clean, and high-flying, just a buck from each of us will do the trick. It's a proved investment that always gets you more for less. Not bad!

For the skeptical (only one or two in house), well, settle back there in that easy chair and get a load of this:

The GAA has been authorizing, aiding, and directing such individual and family delights as: lunch-time activities, exhibits and displays, cut-rate overseas tours and flights, competitive games and tournaments, low-cost tickets for sports events, a great galaxy of clubs and teams, and so on . . . and on. . . .

Hummmmffff, you say? What kinds of clubs? Well, archery, for one, fencing for another, skiing for yet another; but if you want to know about all of them, all you have to do is call GAA, Ext. 2133. As for the intramural activities (sports-type), there's a gaggle such as softball, horseshoes, basketball, bowling, golf (when Spiro's elsewhere); almost everything a Grummanite could hope for.

There's so blasted much, in fact, that organizing and overseeing all this sometimes threatens to overwhelm the hard-pressed GAA staff. And there is the matter of funding . . . as they used to say, negotiable lettuce.

This year's drive starts March 1 and ends March 31. On April 5—mark the date!—there'll be a drawing. All of those with stubs showing that they chipped in with a buck will be eligible to win prizes. The top 15 prizes will be Panasonic portable combination AM/FM cassette tape recorders. Next in line are 50 prizes: sets of Grumman glasses (for drinking).

The guiding light for the GAA drive will be Mike Cherry, GAA's answer to Arnold Palmer.

"The importance of relaxation and competitive activities within the Grumman family have been recognized for a long time," says Cherry. "Our job is to make these opportunities as widespread as possible, so that Grummanites can 'do their thing.' Often we supply equipment for these activities; sometimes we just arrange for facilities.

"The big point is that the dollar-a-year contribution is all GAA asks for to support all of these programs."

That almost ties up the package, but there's a bit of ribbon to be mentioned: Despite years and years of rising costs, membership in the GAA has remained a constant $1 per employee. That's what that pitchman at the beginning meant when he yakked about a buck that can be more than a buck.

"Yes, friends, I tellya what you all should do. Just put up one slim green one and get a GAA card in exchange. Now you're **really** in business."

Getting together. **Carol Lyons (L) of Product Development, Plant 5, and Lorraine Penrice of Product Support, Plant 15, display one of 15 top prizes in GAA drive. That's a Panasonic combination AM/FM tape recorder, in case you're interested. (Photo by Bob Settles)**

Hilbert to lead varsity pin team in bid for L.I. Industrial crown

The Grumman varsity pin team will see if it can get back on track next Saturday night, March 6, when competition for the L. A. (Jake) Swirbul Memorial Trophy will get underway at Mid Isle Lanes in Hempstead. The occasion will be the start of the 30th annual L.I. Industrial Men's Bowling Tournament, an event that has attracted the best industrial pin participants since it was inaugurated in 1942.

There was a time, and not too long ago, when Grumman seemed to have a lock on the team championship. In a 15-year period from 1951-65, the Company five captured the Swirbul Trophy 12 times—running up a string of six straight before Sperry ended the streak in 1966.

Since '65, Grumman has won only once, in 1968. Will this be the year to start another "dynasty?" Perhaps so.

But Captain Ed Hilbert and his teammates, Frank Tucholski, Mike Greggo, Bruce Karen, and Jack Nielsen, will have to make a big improvement on Grumman's fifth-place finish in 1970 competition for the Industrial championship.

Kollsman won last year on the strength of a dramatic last-game rally that pushed it ahead of Newsday in the final standings. And, by the way, it was the first time that any team other than Liberty Aircraft (the winner of the first four tournaments), Sperry, Republic, LILCO, and Grumman, has ever finished atop the Industrial field.

Newsday, although it lost out in its bid for the championship, earned its share of honor by finishing 759 pins above its entering average. Quite an achievement. That total shattered a record that had withstood heavy assaults since 1952, winning for Newsday also the L.I. Industrial Incentive Trophy.

This year the tournament will welcome two new teams— American Airlines and the National Bank of North America—to the 16-team field. In the opening-night lineup with Grumman, American Airlines, and National Bank will be Aerospace UOP (formerly REF), AMF, Airborne, Arma, Doubleday, Fairchild Camera, LILCO, L.I. Water, Newsday, Republic, Pan Am, and Sperry.

The Industrial Tournament starts next Saturday at 8 p.m. and continues March 13, 20, and 27. Teams will roll three games in each session, and the team with the highest pin-fall for the 12 games will be awarded the Swirbul Trophy.

In these days of "super" stars, it seems somewhat ironic that the real "super" stars of this tournament made their mark on the record books many years ago. Take Bill Helstrom, for instance. He helped spark Republic to the team championship in 1950 by rolling a perfect 300 game. It hasn't been equaled since.

Herbie Player, two years later, fired the highest three-game series on record, 793, and finished up the tournament with the highest pin-fall for 12 games, 2,705.

In team scoring, Liberty set an all-time 12-game tournament record of 12,057. That was in 1945—**more than a quarter-century ago.** Republic hit 3,167 for three games in 1950, then came back in 1952 with 1,119 to set an all-time single team game mark.

If records were made to be broken, someone hasn't been getting the message.

Say, what are you doing next Saturday? Why not go down and root for the Grumman team. Mid Isle Lanes are right off Southern State Parkway at the Peninsula Blvd. exit. Come early, though, and be sure of a parking space and grandstand seat for the pin action.